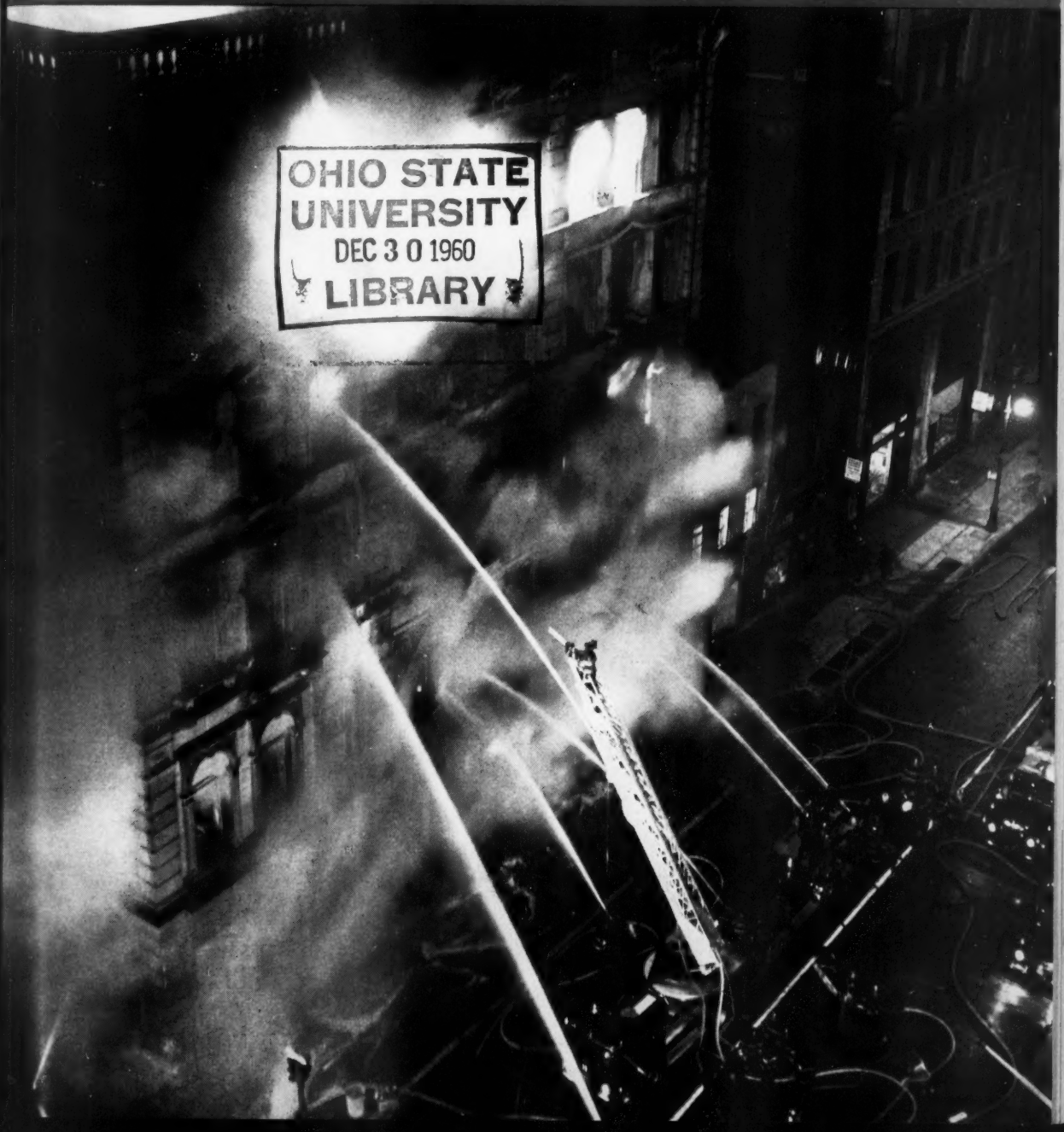
FIRE ENGINEERING

DECEMBER 1960

The Journal of the Fire Protection Profession Since 1877

A Reuben H · Donnelley Publication

New York firemen battle blazing loft building at Broadway and Grand where three fire fighters died on November 18—*N. Y. Daily News photo*



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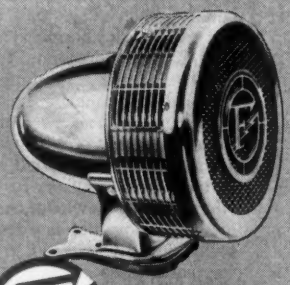
The Maxim Motor Company
extends its best wishes
for a Merry Christmas
and a Happy New Year
MAXIM MOTOR COMPANY
Builders of the world's Finest Fire Apparatus
MIDDLEBORO, MASSACHUSETTS

BUILDERS OF A COMPLETE LINE OF MOTOR FIRE APPARATUS AND STANDARD AERIALS TO 100 FT., MAGIRUS 100 FT. UP.

KEEP THEM ROLLING!

Custom-built pumper on a Ford C1100 chassis with 277 HP. engine, for Southampton, Pa., Fire Co.
Truck has 750 gallon pump and 500 gallon booster tank. It is equipped with full compartments, coat and boot rails and aluminum ladders. Protected by a FEDERAL Class "Q" siren and a #17 Beacon Ray light. Built by Brumbaugh Body Co., Inc., Altoona, Pa.



An overwhelming majority of the fire trucks rolling off the production lines today are kept rolling with dependable FEDERAL SIGNALS.

Modern fire trucks combine every available feature for efficient fire fighting. Part of this efficiency is the ability to reach the scene of emergency. We may sometimes forget that every break through, every invention of the automotive industry is also embodied in these trucks so they can roll instantly at the turn of a key and *keep rolling* with absolute dependability right up to the fire.

FEDERAL **Beacon Ray lights and Coaster Sirens play a very important part to *"keep 'em rolling"*. They roll back the traffic, wake the unwary pedestrian and alert traffic officers to open a pathway to the trucks destination.**

Be sure you specify *FEDERAL* Super Beacon Ray or Strato-Ray light along with a Class "Q" Coaster Siren to keep *your* new equipment rolling.

Write for Catalog #300, today!

FEDERAL SIGNAL SIGN and Corporation **13602 S. Western Ave., Blue Island, Ill.**

FIRE
ENGINEERING

VOL. 113 DECEMBER, 1960 NO. 12

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Proud Achievement

It is not often that a technical magazine can measure its effectiveness through newspaper reports, but a recent incident in New York City provided FIRE ENGINEERING with an unusual opportunity of this nature. The November 7 afternoon edition of the New York *Journal American* carried an account of a member of FDNY Rescue 2 reviving a woman overcome by coal gas after standard fire department procedures had failed.

Fireman Charles Monzillo, realizing the woman was in danger of death, decided to employ "Closed Chest Cardiac Massage," which he had read about in an article by Baltimore Fire Captain Martin C. McMahon in the September issue of FIRE ENGINEERING. As a result, the woman lived. It was later determined she suffered from a heart ailment contracted prior to the emergency.

Naturally we are proud of the part we played in this incident and we salute Fireman Monzillo and Captain McMahon for their effective efforts. Publishing a professional magazine for fire fighters is demanding and exacting work for all concerned. When incidents such as this are reported, we feel it more than repays us for all past efforts by the knowledge that someone still enjoys life as a result of a technique first reported to the fire service in these pages.

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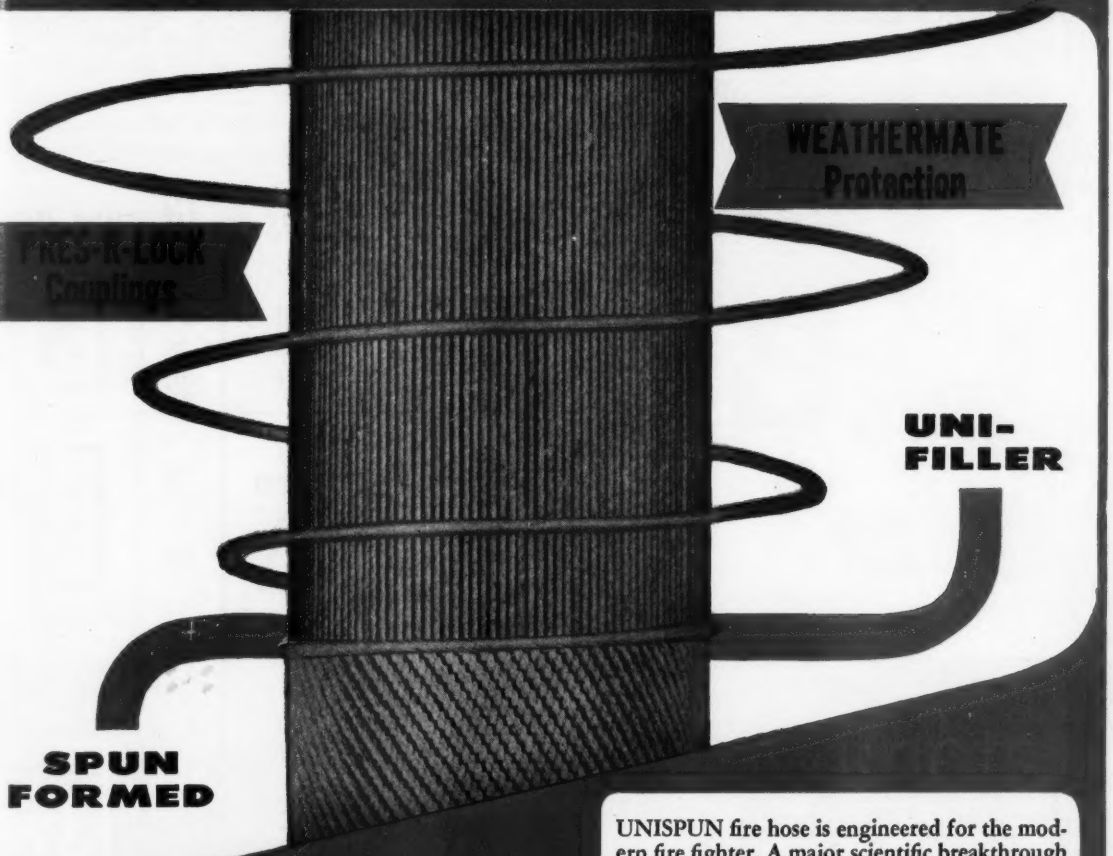
UNISPUN FIRE HOSE



Continuous Uniform
Single Filament Filler
Co-Axially Spun Fire Hose

UNISPUN fire hose is engineered for the modern fire fighter. A major scientific breakthrough from ordinary methods of *weaving*, UNISPUN hose is formed instead by *spinning*. High performance fibers, after blending, are *spun* into constructions at high rotational speeds with extreme precision and uniformity. This new capability to produce *spun* tubular fire hose, another exclusive FABRIC achievement, is an effective assist to the modern fire fighter in search of the best equipment. For further details, write us today or contact your authorized FABRIC representative.

Spun formed to these PERFORMANCE specifications

ZERO TURNS
ZERO WARP
ZERO RISE

FABRIC FIRE HOSE COMPANY

SANDY HOOK, CONN.

IN CANADA *Pierre Thibault* CANADA, LTD., LTEE., PIERREVILLE, QUEBEC

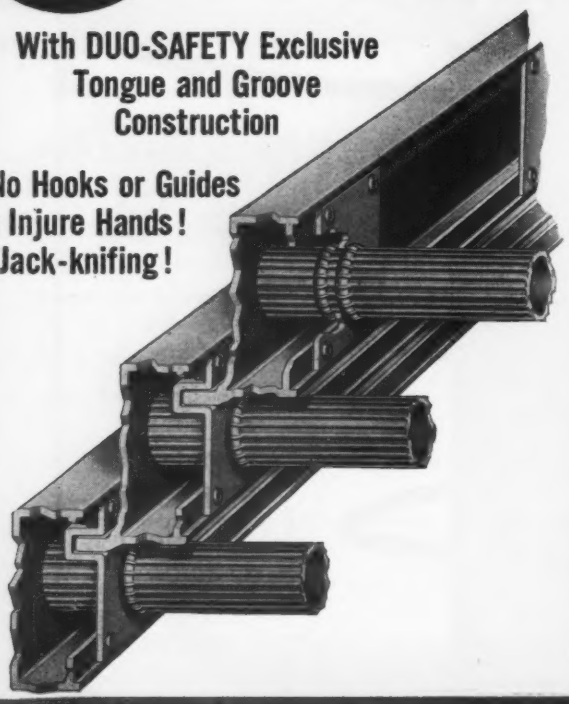
DUO Safety

FIRE LADDERS

Now in FOUR GREAT SERIES

With DUO-SAFETY Exclusive Tongue and Groove Construction

No Hooks or Guides to Injure Hands!
lo Jack-knifing!



Now, there's a Duo-Safety Ladder for every budget...for every use. The new Series 1200—an intermediate ladder—fills out the line to offer you a bigger choice of better ladders. Check the specifications below...you'll find the ladder for your requirements. Write for more information and prices.

Choose the Series to fit your needs!

SERIES 1000	For Pumper Use	24′ to 30′	2¾″ CHANN RAIL
SERIES 900	For Pumper and Service Trucks	24′ to 40′	3¼″ CHANN RAIL
SERIES 1200	For Service Trucks	35′ to 55′	3¾″ CHANN RAIL
SERIES 500	For Service Trucks	10′ to 60′	TUBULAR RAIL

Including the new

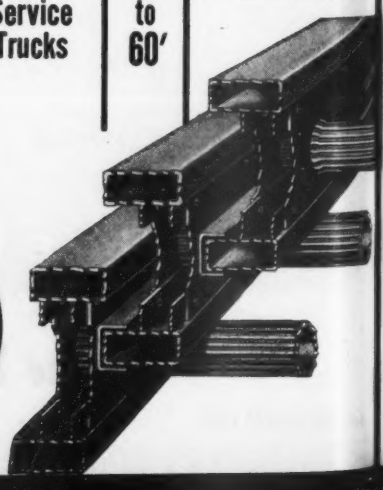
INTERMEDIATE SERIES 1200

The new 1200 Series at budget fitting prices in the famous Duo-Safety line is an intermediate ladder to take care of a range of sizes where requirements are not sufficiently severe to necessitate buying the Duo-Safety heavy duty 500 Series tubular rail!

Write for complete information and prices!

For Great Strength, Extraordinary Safety!

Adapted nationally by fire departments as standard ladder equipment, the 500-A Series represents perfection of ladder design. Light weight, greater strength and extraordinary safety are incorporated into the Tubular Rail Construction of this great ladder. Available in all standard ladder sizes 10′ to 60′.



DUO Safety

DUO SAFETY LADDER CORP.

513 WEST NINTH AVENUE • OSHKOSH, WISCONSIN

In Canada: La France Fire Engine and Foamite, Ltd., Ontario

New B.F.Goodrich Diamond hose has all-Dacron jacket that outwears all others, is never weakened by mildew

ONLY a hose that's terrifically light and flexible could be twisted into such a tight knot! An all-Dacron jacket makes this new B.F.Goodrich Diamond fire hose light weight, easy to handle; yet so tough it will give far longer service than any other type of hose.

B.F.Goodrich has tightly woven Dacron fibers into a hose jacket so strong that abrasion tests show it will outwear ordinary cotton-jacketed hose many times over. It resists snagging. Mildew has no effect on it. Oils, greases and most chemicals can't hurt it. And it absorbs far less water, which means that it stays light and flexible, dries faster, is less likely to freeze in cold weather.

Plylock end protection (an extra layer of hard-woven cords extending 12" from the coupling) adds 100% more strength to the coupling area. A special rubber compound used for the tube stays elastic and tough throughout the life of the hose. Coupling has Koroseal swivel gaskets that seal with hand tightening, never have to be replaced.

If you're looking for the best buy in hose, get B.F.Goodrich Diamond hose with all these quality features. It may cost more to begin with, but will actually cost you less in the long run. Your B.F.Goodrich distributor can tell you more about it. *B.F.Goodrich Industrial Products Company, Dept. M-938, Akron 18, Ohio.*

FIRE HOSE BY B.F.Goodrich

Send a man instead of a boy!

All-out drill or "three-bagger"—it's all the same to Mack fire apparatus because Macks are always ready for any assignment.

When you consider new apparatus, make sure it's capable of handling the most demanding assignment you can anticipate. Make sure it's dependable Mack fire apparatus!

Mack Fire Apparatus, Allentown, Pennsylvania. Mack Trucks of Canada, Ltd., Toronto, Ontario.

COMPLETE LINE OF PUMPERS—500 to 1250 GPM...SQUAD AND HOSE WAGONS...
AERIALS 65' to 144'...COMBINATION LADDER TRUCKS

7432

1
MACK FIRST NAME FOR FIRE APPARATUS

MUELLER®
IMPROVED FIRE HYDRANTS are ready for action — *anytime!* A bronze weather cap keeps water out of the bonnet, prevents ice from freezing the operating nut. Permanent seals guard thread and bearing surfaces from inside and outside water. Double drain valves automatically empty water from barrel section when hydrant is not in use. The lower barrel is tapered to prevent heaving by frozen ground. Traffic damage can be repaired any day of the year without digging or shutting off the water supply.

Whatever your weather, Mueller AWWA Improved Fire Hydrants are always ready for immediate service.

Complete information and specifications available on request.

MUELLER CO. Since 1857 SERVING the Water and Gas Industries QUALITY

MUELLER CO.
DECATUR, ILL.
Factories at: Decatur, Chattanooga, Los Angeles
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5578

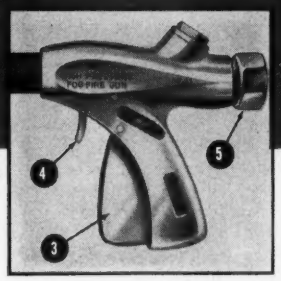
KILL FIRES FASTER

with the JOHN BEAN 29 Fog Fire Fighter Gun

Hard-hitting, triple-action fog cools, isolates and smothers fire

Adaptable to all booster hose systems

Can be fitted for foam applications



1. **PROTECTIVE WATER SCREEN** — Special nozzle provides an effective, vertical water screen to protect operator's face and shoulders from heat.

2. **FAST, EASY STREAM ADJUSTMENT** — You quickly and easily change from close-up fog to long range stream patterns by simply rotating the sleeve.

3. **NATURAL TRIGGER GRIP**—Gun discharges by pressing easy-to-use fist-fitting grip lever.

4. **POSITIVE GUN LOCK** — To relieve arm muscles, stream can be set in any pattern and locked. Pressing the grip instantly unlocks the gun.

5. **SPECIALLY DESIGNED HOSE SWIVEL (Accessory)** — Prevents hose twisting; and eliminates undesirable coiling when fighting fires. Available in 1" I.P.T. or N.S.T. threads.

Versatile John BEAN Gun adjusts quickly and easily to all FIRE-KILLING FOG PATTERNS

Wide angle pattern

Middle range pattern

Long range fog pattern

John fmc **BEAN**

Lansing 4, Michigan San Jose 1, Calif.

ORIGINAL FOG FIRE FIGHTING GUN

Food Machinery and Chemical Corporation

SEND COUPON for details TODAY

I am interested in the original John BEAN 29 Fog Fire Fighting Gun.

Please send complete information to me.

Name_____

Title_____

Address_____

City_____ State_____

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Community trusted and approved

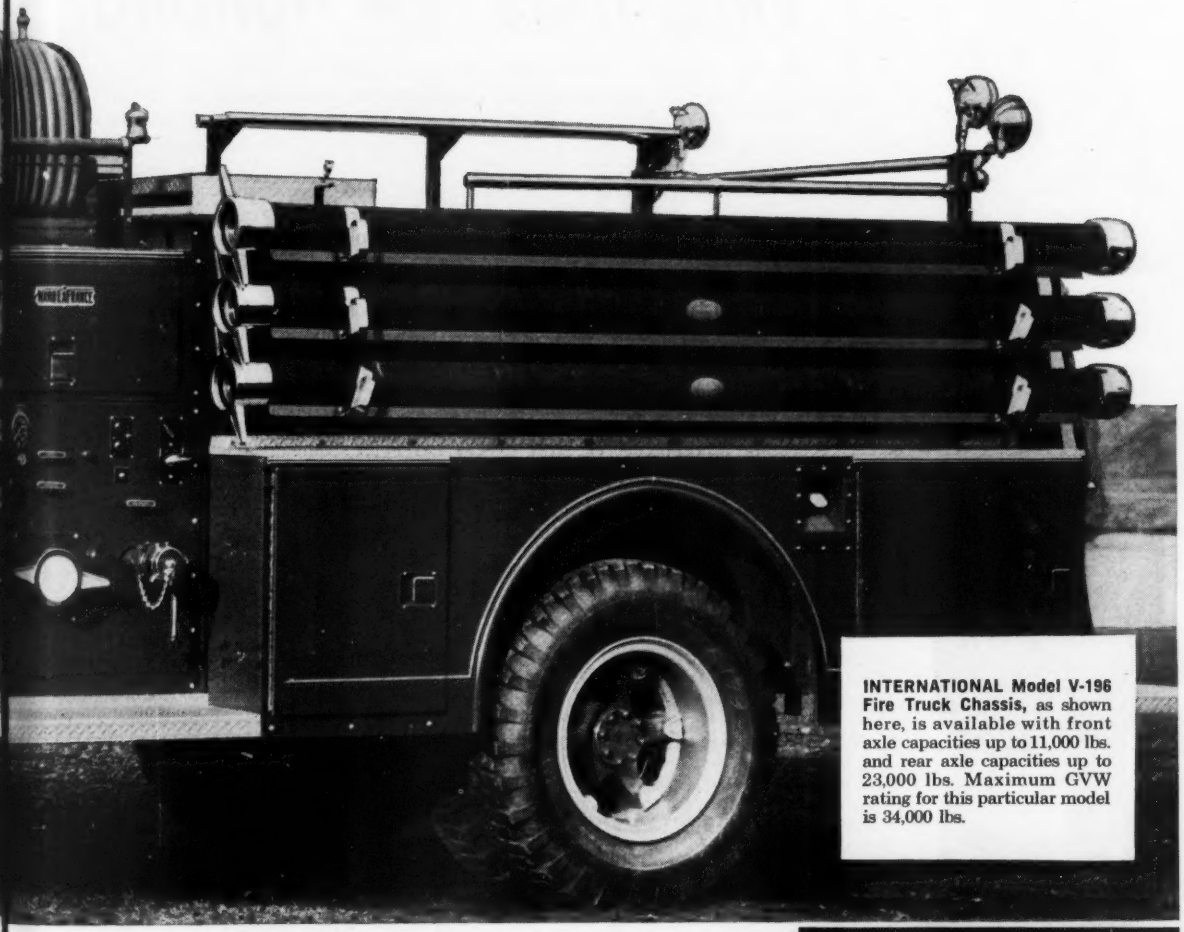
Modern, up-to-date communities can point with pride to their INTERNATIONAL Fire Truck Chassis as "trustworthy citizens."

Concern over dependability and safety is eliminated with V-8 powered models that give you and your community the doubly sure action of dual-ignition engines. You can fire both sets of plugs simultaneously, or either set individually, by turning a switch. These rugged, true-truck INTERNATIONAL V-8's deliver dependable pumping power with up to 257 hp., capacities up to 1,250 gpm. INTERNATIONAL V-8, or optional six-cylinder gasoline or LPG-equipped engines are available in a range of conventional, compact-design or cab-over-engine chassis to meet driver preferences and equipment requirements.

Complete, fast servicing is provided by thousands of INTERNATIONAL Truck service locations . . . there's one either in or close to your community.

See your INTERNATIONAL Dealer or Branch soon for complete details. Here's how you can get components and know-how to help you custom-fit your fire truck chassis.

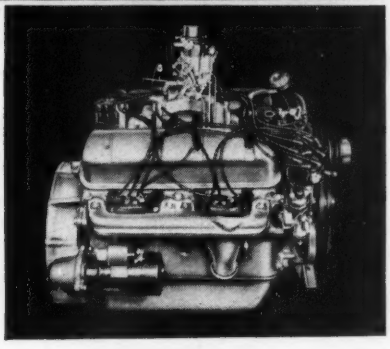
CHASSIS with dual ignition



INTERNATIONAL Model V-196 Fire Truck Chassis, as shown here, is available with front axle capacities up to 11,000 lbs. and rear axle capacities up to 23,000 lbs. Maximum GVW rating for this particular model is 34,000 lbs.

Dual Ignition Makes INTERNATIONAL V-8 Power Even Better!

461 and 549 cu. in. displacement V-8's are true low-stress engines and proved to operate at maximum rpm. By-pass cooling and alternating valve system adds long compression life. Contoured heavy dome piston and combustion chamber create high turbulence and even burning.



INTERNATIONAL® TRUCKS WORLD'S MOST COMPLETE LINE

International Harvester Company, Chicago • Motor Trucks • Crawler Tractors • Construction Equipment • McCormick® Farm Equipment and Farmall® Tractors

New WOOSTER UNI-FLO NOZZLE *simplifies fire fighting*

Wooster Uni-Flo Nozzles deliver the same GPM on all settings—straight stream and 15, 30, 60 and 90° fog patterns. Standardizing on Uni-Flo Nozzles makes firemen-training easier . . . simplifies and advances your fire-fighting technique. The man at the pumper knows exactly how much water to deliver at the nozzle, no matter what the nozzle setting. And the man at the nozzle can meet every fire situation by switching from straight stream to any fog setting, knowing exactly what pattern and stream force he will get. Wooster Uni-Flo Nozzles are ruggedly constructed to minimize wear and breakdown. Should service be needed, parts can be replaced in minutes without special tools.

You can select Uni-Flo Nozzles for hose in sizes from ¾″ to 2½″ and capacities from 18 to 250 GPM. The same sizes are also available as Uni-Flo Nozzle Tips for convenient "break-apart" use (as illustrated). Uni-Flo Nozzles and other Wooster brass fire equipment are available from Fyr-Fyter, Pyrene-C-O-Two and Buffalo industrial distributors and fire equipment specialists. Look for their local listings in your Yellow Pages under "Fire Protection Equipment." Or write to The Fyr-Fyter Company, Dayton 1, Ohio.

Chromed hard baffle plate and perforated edge produce dense, uniform fog patterns.

Non-slip rubber grip extends over edge to protect against impact.

Five positive, click-stop stream positions . . . entirely enclosed, can't freeze.

Smooth, easy turning at all pressures.

Rugged, rigid stream setting indicator.

Cushion-ball shut-off control . . . easy action under all pressures.

Full diameter, non-interrupted waterway minimizes friction loss.

Double-stop provides positive valve alignment, open or closed.

Design minimizes clogging . . . clogging is easily freed.

New wide handle for gloved-hand operation.

NEW UNI-FLO TIP with cushion ball shut-off for "break-apart" applications.
FOG OR STRAIGHT STREAM
APPLICATOR CAN BE ADDED
FASTER HOSE LINE EXTENSION
CONVERT TO FOAM QUICKLY
WET WATER APPLICATIONS

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products of THE FYR-FYTER COMPANY

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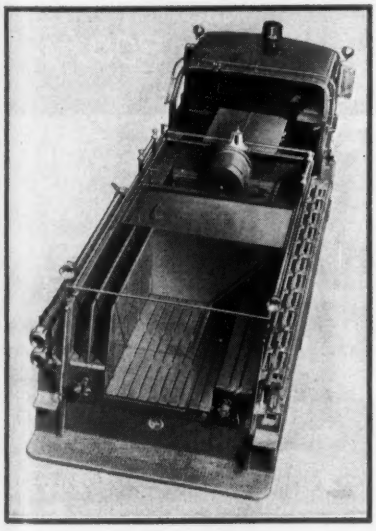
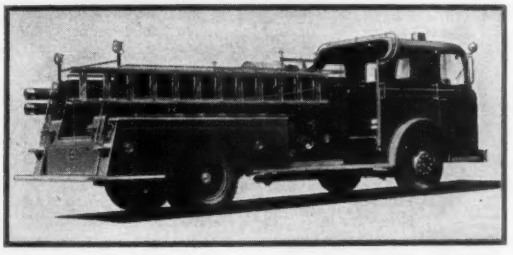
THE PIRSCH CUSTOM CAB FORWARD PUMPER

Whether you select the Pirsch Conventional Style or the new Pirsch Cab Forward Pumper you get the same rugged qualities that have been characteristic of Pirsch Custom Pumpers for decades.



The cab of the Pirsch Cab Forward Pumper with its many superior features is built by Pirsch of heavy gauge cold rolled steel; its generous inside width and height provide comfortable seating room for the crew and the extra large windshield area provides wide visibility for the driver; these are important built-in safety features of this new Pirsch Pumper.

Heavy duty, high torque engines of high developed horsepower in combination with modern, efficient single or multi-stage centrifugal pumps in various capacities are available in all Pirsch Custom Pumpers.



Write for further information about this new Pirsch Cab Forward Pumper

Peter Pirsch & Sons Co. KENOSHA, WIS.

first in fire fighting for over 50 years!

Waukesha has been building engines for fire equipment for over fifty years. Since one of its first internal combustion engines for fire fighting service was sold to the Chicago Fire Department in 1908, Waukesha has built into these fire engines quick acceleration, flexibility, immediate response to varying load demand, and the reserve of extra power needed for emergency overload.

Waukesha Fire Fighter Engines are in use throughout the United States, and in many foreign countries, in the finest fire equipment built by leading manufacturers.

WAUKESHA

WAUKESHA MOTOR COMPANY, WAUKESHA, WIS. • New York • Tulsa • Los Angeles
Factories: Waukesha, Wis., and Clinton, Iowa

FIRE FIGHTER ENGINES

...up to 300 hp

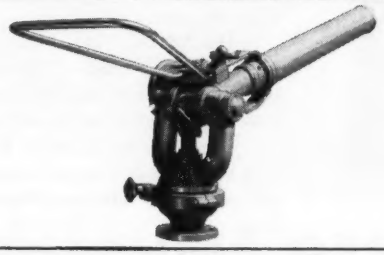
477

Checking on performance of Waukesha Fire Fighter Engines.

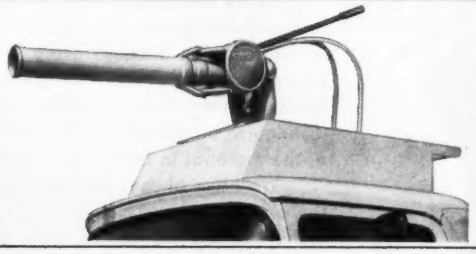
Most Complete Line of Specialty Turrets on the Market!

...All Rockwood Turrets Discharge FogFOAM
Solid FOAM Stream — WaterFOG — Solid Water Stream

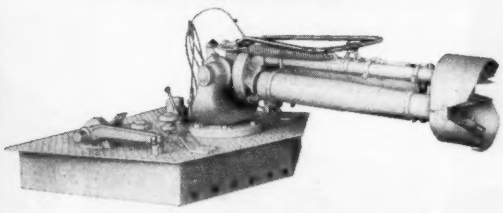
Extended Manual Control Type — Turret nozzles extend 10 to 20 feet above remote control station on deck or ground on standard units ... greater remote extensions for special applications.



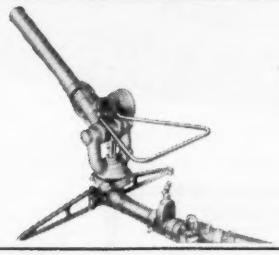
Direct Manual Control Type — Gives fire fighters "out-in-the-open" control from cab roof!



Remote Manual Control Type — Easily handled by man in driver's seat. Ideal for fast action!



Remote Hydraulic Control Type — Power-controlled from within the cab. Single and dual models. Widely used on air crash rescue fire-fighting trucks.



Portable Type — Off the truck and into action in seconds! Goes wherever a fire fighter can bring the proper hose line into action!

On the truck or on the ground, fire fighters can hit fires *harder* using ROCKWOOD Turrets! At airports and refineries . . . in municipalities and throughout industry . . . these advanced-design fire-fighting aids are constantly proving their ability to extinguish fires faster.

ROCKWOOD Turrets provide plenty of volume *and* versatility. What's more, all are easily adjustable on the fire line to meet changing fire conditions. Produced by the world's largest manufacturer of specialty Fire-Fighting Turrets, they're designed to give fire fighters an extra edge of efficiency on most types of fires. Get full details on the complete line of fire-fighting products. Write ROCKWOOD SPRINKLER COMPANY, Portable Fire Protection Division, 446 Harlow Street, Worcester 5, Massachusetts.

ROCKWOOD SPRINKLER COMPANY

A Division of The Gamewell Company
Subsidiary of E. W. Bliss Company

Engineers Water ... to Cut Fire Losses

Distributors in all principal cities.

MIDWESTERN

Safety Clothing for Firemen

The Original **STRIPED** SAFETY COAT

The striped safety coat for firemen is an Original Midwestern development — first in the field — a leader ever since its introduction 19 years ago.

The BRILLIANT YELLOW stripes are actually rubberized into the black rubber . . . an exclusive feature that defies comparison with substitute or imitation models where the stripes are glued, sewed or painted on the material.

When working under hazardous conditions in smoke, fog, dust or darkness, firemen deserve the superior quality, design, comfort and safety features offered by the Original Midwestern Safety Coat.

Many Fire Chiefs who insist on the best of protection for the men of their department specify MIDWESTERN SAFETY garments to the last man because every outstanding Midwestern feature is original. All fabrics are extremely soft and flexible and have the qualities to stay that way at varying temperatures. You can always distinguish a MIDWESTERN SAFETY garment by the soft feeling of the material in both rubber and fabric type garments.

We have always designed and constructed our garments with the one thought . . . that every fireman deserves complete protection in his hazardous work of protecting life and property against the ravages of fire.

COMBINATION BUNKER SUITS

MIDWESTERN SAFETY MANUFACTURING CO.
Mackinaw, Illinois

☐ Have Midwestern representative call with complete information and prices.
☐ Send Free Catalog and fabric samples.

Name_____

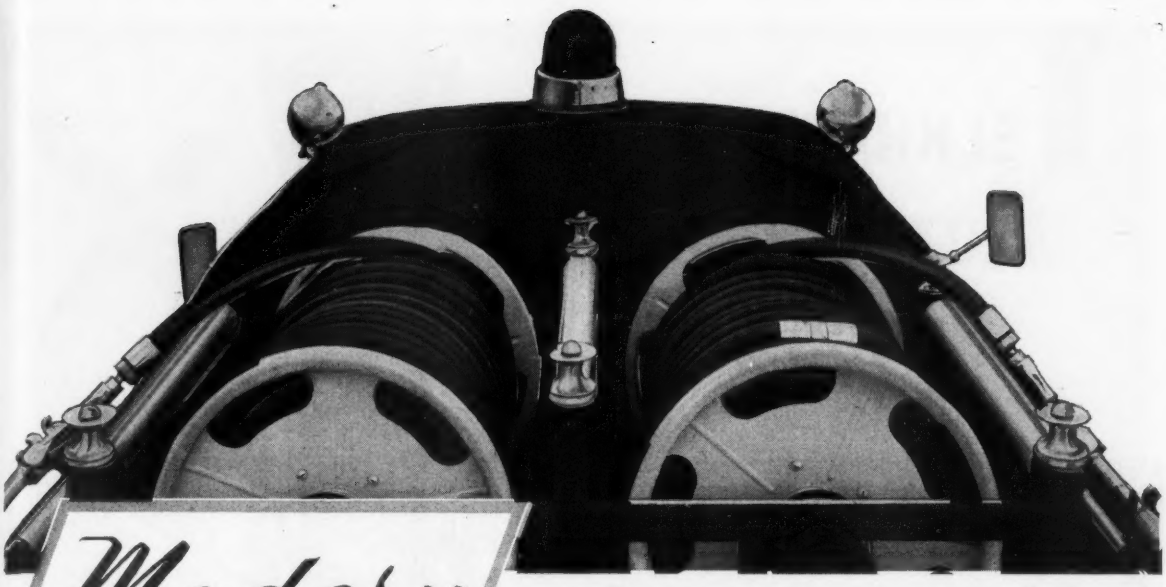
Address_____

City_____ State_____

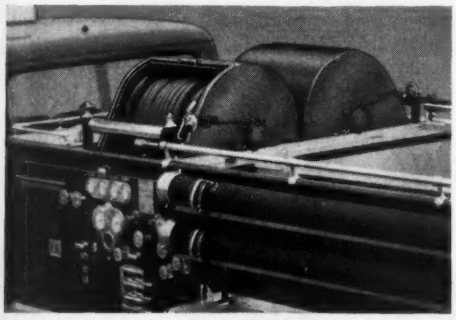
The many weights of both rubber coated and cloth type materials offered in our MIDWESTERN Quick-Hitch suit makes this combination ideal for all sections of the domestic market and export. Also, both coat and bunker pants may be purchased with or without detachable wool linings.

NONE GENUINE WITHOUT THIS TRADE

MIDWESTERN SAFETY MFG. CO., Mackinaw, Ill.
Located in the heart of the Greater Peoria Manufacturing Area
Manufacturers of the Famous MACKINAW Safety Coat



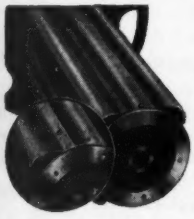
Modern HOSE REEL FEATURES ON American Fire Trucks OFFER MANY ADVANTAGES



From bumper to rear step, American Fire Trucks are packed with features firemen like—features like these superb AFA-built hose reels. See how every detail helps give you faster operation, smoother performance and greater convenience than any other reel built!

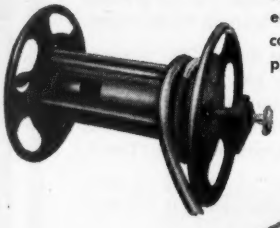
- Electric Rewind*. Heavy duty silent V-belt drive is flexible and won't damage equipment or personnel if hose or nozzle become tangled when rewinding.
- One standard heavy-duty starter motor drives *both* reels. Motor can be serviced locally.
- Reel brakes can be adjusted from the ground to prevent back lash.
- Chrome plated brass guide rollers and deep groove spools, and leak proof *ball bearing* stuffing boxes are standard.

Controls on both sides of truck operate reels. Rewinds operate only one at a time to prevent battery overload.



Sliding covers* protect hose reels and fog guns from freezing.

Collapsible, *self-adjusting* spring steel drum louvers flatten when pressure expands hose. Prevents damage to hose and couplings.



Special convex reel wheels with *wide* rolled edges protect hose. Hose comes *straight* from coupling—*not* sharply bent.

*Optional features at extra cost.

American pioneered the first successful electric rewind hose reel and has continued to increase the fire-fighting advantages of these units.

You can choose hose reels with electric, hand-crank or hand-operated rewinds in keeping with American's policy of giving you a choice of chassis, choice of midship or front-mounted pump, and choice of other features to suit *your* community's needs.

Contact your nearest American representative soon!

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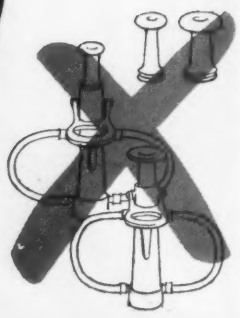
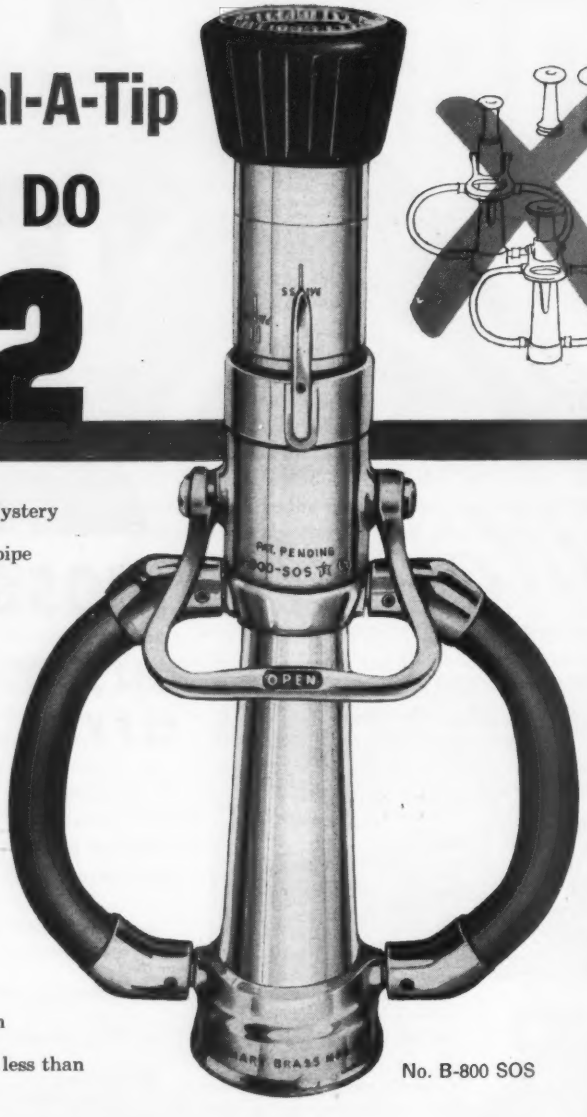
Main Office: Main Street Rd., Battle Creek, Mich. Plants at: BATTLE CREEK, MICH., MARSHALLTOWN, IA., STRATFORD, ONT.

1 ELKHART Dial-A-Tip NOZZLE CAN DO THE JOB OF 2





No. B-800 SOS

It's a fact. This new patented Dial-A-Tip Mystery Nozzle can replace two nozzles: (1) The Underwriters' required straight stream playpipe combination, and (2) The old style fog playpipe combination. Saves time at the fire scene . . . saves space on the pumper . . . saves money, too! This nozzle has three calibrated straight stream positions: ⅞", 1" and 1⅛" which at 100 p.s.i. nozzle pressure throw 175, 225 and 250 G.P.M. respectively. It is also rated at 275 G.P.M. at 30° fog at 100 p.s.i. *These gallonages are verified by Underwriters' Laboratories tests.* Actually, any gallonage can be dialed in the straight stream position from 250 G.P.M. down to that of of a booster hose. In addition, the nozzle has an adjustable seat, raised stream indicators and Mystery nozzle teeth. An important design feature of the B-800 SOS places approximately 80% of its weight in front of the playpipe handles. This helps balance the weight of the hose and makes it easier to handle. By making the shutoff an integral part of the playpipe, the weight of this nozzle has been reduced 20% to 25% less than comparable playpipe combinations.

Normally supplied with ladder hook and rigid 2½" base, available with swivel base. Can be ordered without ladder hook.

Base thread 2½". Bottom of tip and top of playpipe Underwriters' or any 1½" thread. Polished Brass or Chromium plated finish.

For fog tip only, specify No. B-200 SOS

We have contacted rating bureaus in many sections of the country and have been assured that if a department were to substitute the No. B-800 SOS for the required straight stream stacked tip nozzles, they *would not be penalized* in the grading of their departments. We urge you to contact the insurance Rating Bureau in your state for verification.

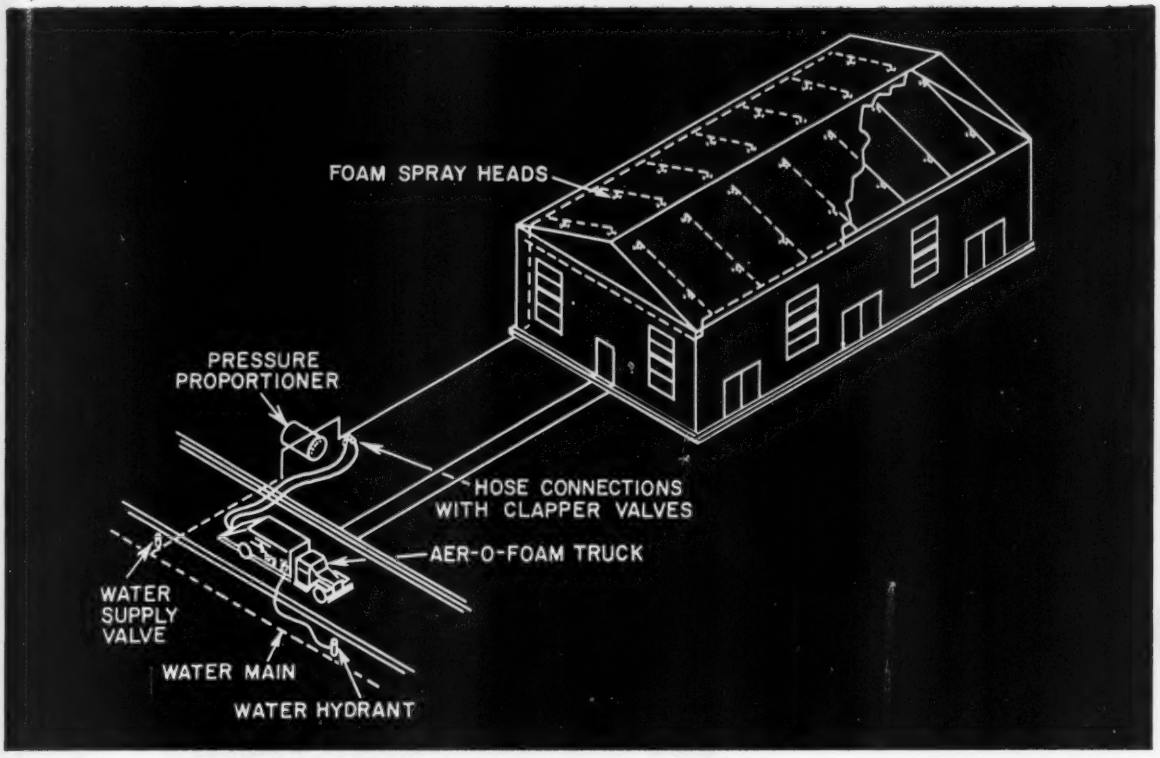
No. DB-200 SOS

Dial-A-Tip Direct Connection Nozzle

Elkhart No. DB-200 SOS offers identical features of the B-800 SOS, but is designed as a direct connection nozzle for 2½" hose.

Your Elkhart representative will gladly tell you more about the advantages of the Dial-A-Tip nozzle. Please write our Sales Department for prompt action.

ELKHART BRASS MFG. CO. INC., ELKHART, INDIANA



HOW TO USE FOAM TRUCKS

to protect additional refinery areas—at low cost

Pump houses, manifold pits, pipe trenches and other "hot spots" in refineries often lack the fixed fire protection systems found on storage tanks.

This condition can be corrected, promptly and inexpensively, with systems such as that shown in this diagram of a typical pump house.

Overhead foam spray heads are connected with a single pipeline leading back to a water source. At a point in this line, a proportioner holds a supply of Aer-O-Foam Liquid sufficient to operate the system for perhaps ten minutes.

In the event of fire, the operator opens the valve, starting foam discharge in a matter of seconds. At the same time, a foam truck is dispatched to the scene and hooks its discharge hose into the downstream side of the proportioner, providing ample foam liquid to operate until the fire is extinguished.

* * *

With every modern advance in design and construction, National Aer-O-Foam Trucks perform tasks like this efficiently and economically. These trucks are typical of National's contributions to better control of fire in flammable liquids.

National Foam System, Inc.

West Chester, Pa.

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DURA·FOG NOZZLE

THE "Finest" IN THE SERVICE

Knock down fires faster — easier!

Finer dispersion, uses less water ● Each nozzle sold has a 100% performance test ● A strong husky nozzle ● Maintenance free ● Greater reach ● Denser curtain ● No kick back ● Operates easily under high pressure ● TRY IT OUT! You can—by simply writing us and telling us you want to see and test it ● Write today!

OVER A MILLION SHUT-OFFS AND NEVER A LEAK!

Dura-Fog Nozzles have been thoroughly bench tested, to assure dependability ● Our goal was 250,000 shut-offs, actually tests have gone over a million with no leak!

FLOW IN GPM AT 100 PSI NOZZLE PRESSURE

SIZE	STRAIGHT STREAM	30° FOG PATTERN	60° FOG PATTERN	90° FOG PATTERN
1"	20	22	32	35
1-1/2"–60	57	60	72	88
1-1/2"–100	95	100	105	107
2-1/2"	135	165	190	225

SWIVEL OR SOLID BASE

SIZE	List Price · Polished Brass	Chrome Plated
¾"-1"	$67.65	$72.05
1½"	72.05	76.45
	(For Play Pipe)	
2½"	78.65	84.15
	(Direct Conn.) 2½" Thd.	
2½"	91.85	97.35

POWHATAN

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In The Same Location Since 1892

"Know-Howe" Does It Again!

A 75 ft. all steel, 3-section aerial ladder mounted on the famous Howe Defender 5-man canopy cab-forward chassis! A most valuable addition to the fire equipment of a city of any size! The entire ladder system is fully powered for greatest maneuverability and efficiency.

BRIEF SPECIFICATIONS OF UNIT SHOWN

LADDER: 75 ft. all-steel, 3-section (4-section optional). Base section 2" wide x 12" deep at the base, tapering to 6½" deep at the outer end. Middle and fly sections are rectangular in cross section with heavy walled high tensile steel. Mid-section is extended by means of a hydraulic motor driving two No. 50 roller chains with an ultimate strength of 6100 lbs. each. Ladder cables for the fly section are tinned aircraft cables with a minimum breaking strength of 7,000 lbs. each.

BASE: The rugged circular steel base is full chassis frame width and is rigidly anchored and reinforced. Turntable bearing is a precision and hardened monorace bearing with 1" chrome steel balls. Rotation is accomplished through an extra heavy-duty hydraulic motor and worm gear reduction unit in the ladder base. A special multi-part swivel joint in the center of the turntable permits continuous rotation in either direction.

ELEVATING MECHANISM: The ladder is elevated to any angle between horizontal and vertical by means of two direct-connected, double-acting hydraulic cylinders with 6" bore and 2⅝" high carbon steel piston rods.

OUTRIGGERS: Outrigger jacks are hydraulically extendable to 12 ft. overall width, and hydraulically actuated independent of each other to permit easy lateral leveling on sloping terrain or crowned roads.

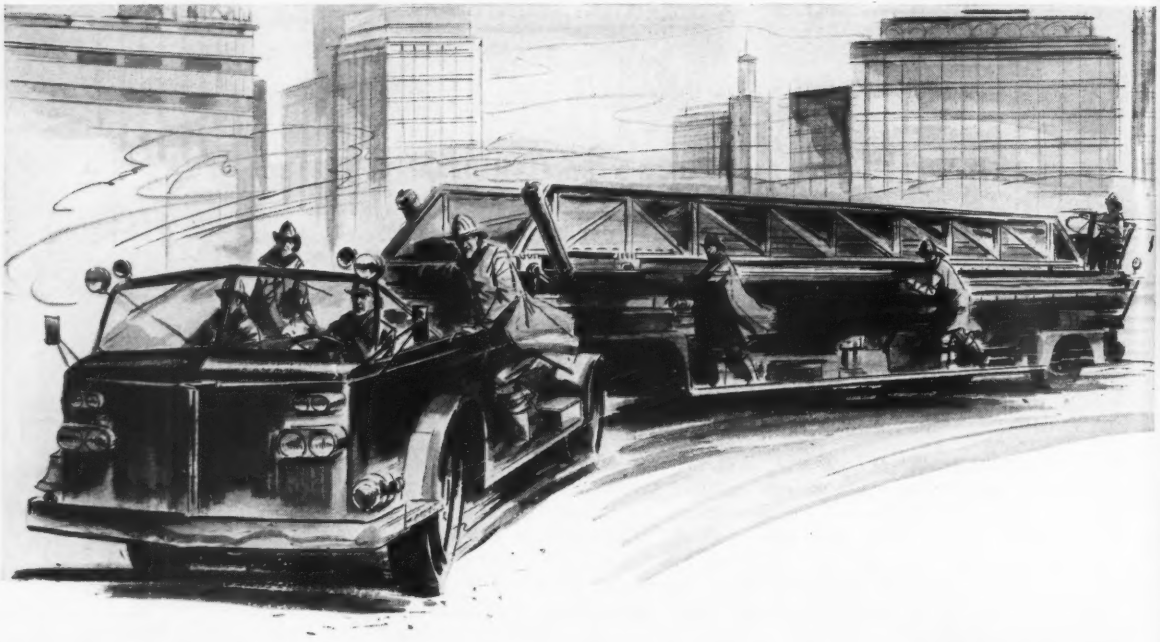
CHASSIS: Howe Defender 5-man canopy type cab forward with removable top section for easy access in servicing engine. Waukesha Model 145GZB, 817 cu. in., 300 HP engine. 208" wheelbase.

"KNOW-HOWE" does it!

HOWE FIRE APPARATUS COMPANY

"dependable fire apparatus since 1872"

Dept. FE-1260, Anderson, Indiana, U. S. A.



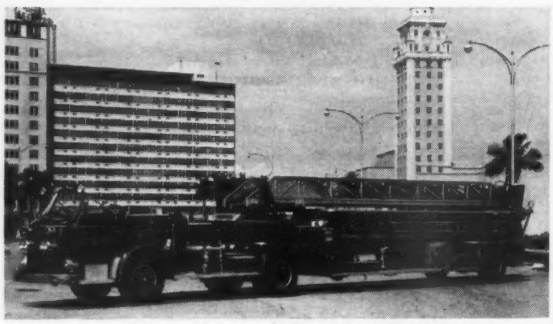
You can really "*Feed it the coal*" if it has A Spicer Turbo-Matic Transmission!

American LaFrance fire apparatus equipped with Spicer Model 183 Turbo-Matic Transmissions really take off and go when the fire alarm sounds.

Fast, smooth, uninterrupted acceleration is assured—regardless of load or terrain. And when a vehicle reaches cruising speed, the "183" shifts automatically into direct drive. Engine performance is at maximum efficiency every foot of the way from firehouse to fire—and greater operating economy results.

The Spicer Turbo-Matic makes for safer driving, too. Since no manual shifting is required, the driver is free to devote his full attention and energy to maneuvering his vehicle through traffic and over difficult road conditions.

Fire departments all over America are specifying



• Photo of American LaFrance aerial Truck, courtesy of Miami Fire Department

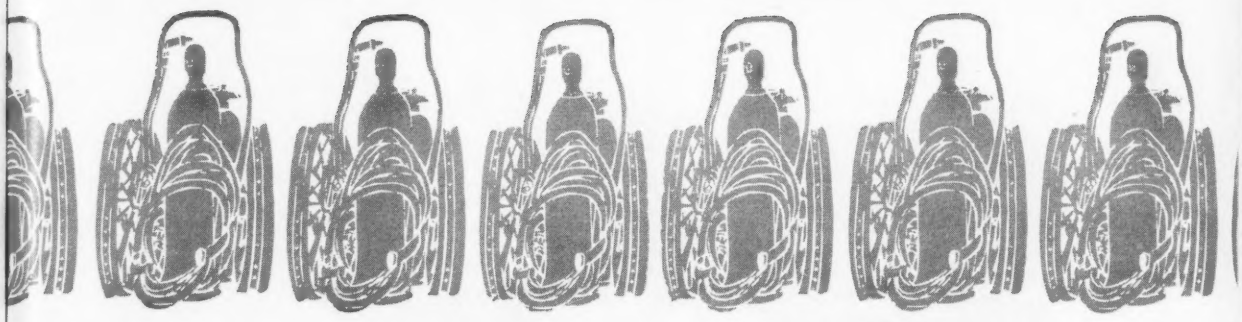
Model 183 Turbo-Matics on new equipment purchases. Get the complete story on their many advantages before you order *your* new equipment.

Write today for your free copy of this fact-filled, illustrated folder on the Model 183 Turbo-Matic Transmission, the key to maximum fire-fighting efficiency.

DANA Spicer

DANA CORPORATION

Toledo 1, Ohio



This fire extinguisher, Ansul's HF 350-B, has just been granted the highest fire-killing rating ever awarded by Underwriters' Laboratories—160 B:C. It's an achievement symbolic of Ansul's continuing leadership in fire research... a milestone in the never-ending search for new ideas, new products for better fire protection.

Your local Ansul Man is a trained fire protection expert, available to survey your plant and counsel on your fire protection requirements. We invite you to call on him (he's listed in the Yellow Pages) or write directly to ANSUL CHEMICAL COMPANY, Marinette, Wisconsin. We'll be pleased to send our new fire equipment catalog, describing the complete Ansul line of hand portable, wheeled, stationary and mobile fire extinguishing equipment and automatic systems.

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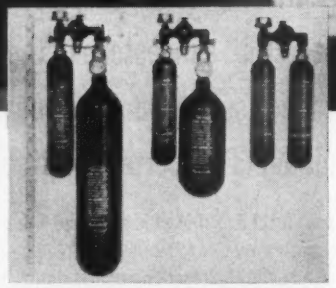

Light and Compact in All Sizes. On PocketAIRE Models 1520, 1510 and 1500 one 5-minute cylinder is the standard "escape" feature. Working cylinders are for full 25 minutes, full 15 minutes and full 5 minutes. Total weights are 10 lbs., 8 lbs. and 6 lbs. Available in partial and full-face masks.

Where seconds count... PocketAIRE® counts most!

Now firemen can add precious minutes to their search for trapped victims. Rockwood's lightweight PocketAIRE, the most compact, self-contained breathing apparatus made, goes into action in 7 to 10 seconds . . . enabling firemen to work faster and more efficiently without the hindrance of bulky equipment.

What's more, by using pure oxygen instead of compressed air, PocketAIRE supplies the most concentrated, most effective element to safeguard human breathing. Another extra feature is the safety cylinder that allows 5 minutes for escape. PocketAIRE cylinders, all sizes, cost only pennies to refill, anywhere.

Get details on how you can protect every fireman in your department with safe, compact, economical PocketAIRE. Write Rockwood Sprinkler Company, Portable Fire Protection Division, 2012 Harlow Street, Worcester 5, Massachusetts.

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King-Seagrave Ltd., Woodstock, Ont.

Their City Guards its Growth . . .

There's good reason for the confident smiles on the faces of Fire Chief J. Leo Rivard and Mayor F. L. Bergeron of Willimantic, Conn. They know that their city's fire alarm system is adequate and properly maintained.

Willimantic's forward-thinking officials make certain that new fire boxes are added as fast as the rapidly growing city needs them. Protected by the completely automatic Type B Gamewell System, Willimantic has 90 boxes including those on the curb, in schools, hospitals, industrial plants, old age homes, and supermarkets. Alarms are transmitted directly to fire officers' homes as well as to the station. Volunteers are alerted by air horn.

The system has proved itself. When major replacements were necessary in 1954, a broad and intensive study of other types of alarms was made. Unanimous decision of the fire chief, mayor, and board of fire commissioners was that no other system equalled Gamewell for dependability, efficiency, and economy.

Be sure that *your* municipal officials know about Willimantic's positive, economical fire alarm system. A Gamewell Survey will show precisely how your community's protection compares. For complete details on this comprehensive survey, write The Gamewell Company, 1246 Chestnut Street, Newton Upper Falls 64, Massachusetts. *A Subsidiary of E. W. Bliss Co.*

Recent New Installations of Gamewell Fire Alarm Systems

- Chester, Penna., Type "A"
- Las Vegas, Nev., Type "B"
- Alexandria, La., Type "B"
- San Jose, Calif., Type "A"
- Tulsa, Okla., Type "A"
- Yonkers, N.Y., Type "A" (*decentralized*)

BLISS Gamewell®

FIRST . . . WHEN SECONDS COUNT

FIRE ENGINEERING

VOL. 113, NO. 12 DECEMBER, 1960

THE JOURNAL OF THE FIRE PROTECTION PROFESSION SINCE 1877

Support The Fire Administration Institute

Recent attempts by the International Fire Administration Institute to begin operations in cooperation with the University of Southern California and Queens College in New York City, have failed. The first announced classes for the 12-week college level courses in both institutions were cancelled due to lack of students. It should be emphasized that this was not due to a lack of interest on the part of municipalities.

The director of the Queens College program recently reported that 17 eastern communities, several individuals and one industrial concern have expressed definite interest in future courses. According to the director of the Queens School of General Studies, a minimum of 15 students is necessary to justify operation of the curricula. This number will not cover all expenses but the college authorities are willing to share the cost in order to get the program under way. A minimum of 20 students are necessary in order for the school to break even.

The most serious problem appears to be a lack of funds to underwrite the expenses of students. With the restrictions of municipal finance, it is not difficult to understand this; unless monies have been allocated in advance, it is practically impossible to obtain them until the next annual budget is prepared and adopted. It is estimated by Queens College that the minimum cost per student for all essentials will approximate $1,500. While this may be considered high in some quarters, it is in line with comparable courses in other fields.

It is understandable that some communities caught in a fiscal squeeze, may at present have to forego any thought of training their senior officers through use of tax monies. Perhaps the possibility of obtaining assistance from business groups, service clubs, educational or philanthropic organizations, etc., which may be able to underwrite the expenses of the students, should be given careful consideration.

At this moment, it appears important that the program receive financial scholarship support if it is to begin to function. The Fire Administration Institute is charting a new path toward increased professional standing for the fire service but the going is rough due to the restraints of municipal finance. It seems essential that if the program is to get off the ground then monetary aid is needed from sources outside local budgets.

Additional problems which may have a bearing on the program in the future are the reluctance of the community to lose the services of a top officer for a period of three months, as well as the hesitancy of the student-elect to leave his family for the same period. These are serious considerations which should be judged against the expected gain, both for the community and the individual.

College-level training for top-level officers of other agencies of municipal government has been an accepted procedure for many years. In fact, one of the criticisms commonly aimed at the fire service by students of government is the lack of broad administrative training when contrasted with the wealth of technical seminars, schools and conferences currently available in practically every area of the country. This apparent weakness can be expected to disappear rapidly once the presently offered program is an accomplished fact.

Both Queens College and the University of Southern California have advised the International Fire Administration Institute of their intentions to offer the courses early in 1961. Now is the opportune time for all interested fire officials to acquaint their governing body with the information. If municipal finances do not permit immediate action, then long-range budget plans for the purpose should be outlined. At the same time, every other avenue should be explored for obtaining the necessary funds to send a chief officer to the pilot courses.

For some years, progressive fire officials have advocated this type of program and the Institute has made it available. What is now required is the support of every fire officer to make it a reality. In projects of this nature, the will to proceed is sometimes the only ingredient lacking.

Hlow O'Brien

Progress in Safeguarding Chicago Schools

Much has been accomplished since December 1958,

By BERT M. COHN, P.E.

The author graduated from Illinois Institute of Technology in 1952 with a B.S. degree in fire protection and safety engineering. He has served as an engineer with the Missouri Inspection Bureau and as a fire protection engineer with the Corps of Engineers at the Engineer Research & Development Laboratories and at U. S. Army headquarters in Japan and Korea. In 1957 he joined Gage-Babcock & Associates, Inc., then U. S. Fire Protection Engineering Service, in Kansas City and was transferred to the Chicago office in 1959. At the present time he is supervising the engineering of fire protection improvements for life safety in public and parochial schools in Chicago and Detroit. He is a member of the National Society of Professional Engineers and the Society of Fire Protection Engineers.

***Capacity of the booster pump is measured as part of the acceptance testing of new sprinkler system at John Marshal High School in Chicago. The author takes pitot tube readings while Tom Hoban, fire prevention bureau engineer, right, records the data**—All photos by James C. McCall, Jr.*

TWO YEARS have gone by since the Our Lady of the Angels fire in Chicago caused officials in communities all over the country to cast critical looks at fire protection in their own schools and forced a complete re-evaluation of the whole problem of school fire safety by concerned national, state, and local groups. Late in January 1959, less than two months after the fatal fire, the Chicago City Council enacted the first of several ordinances in the hope of attaining, through legislation, the goal of fire-safe schools.

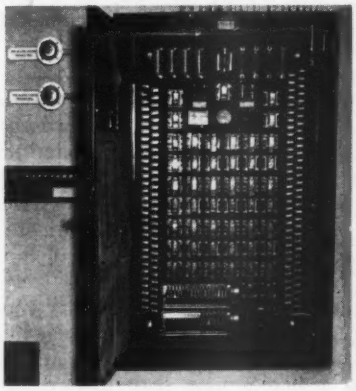
The four requirements embodied in the changes to the municipal code which the city council unanimously adopted as its first step to achieve fire-safe schools were:

- Automatic sprinklers in school buildings of less than fire-resistive construction if over one story in height.
- A fire alarm box within 100 feet of the main entrance of every school more than one story in height.
- The school fire alarm tied in with the city fire alarm box.
- Monthly fire drills in every school building, supervised and witnessed by fire department personnel.

The most expensive of these solutions to the fire problem became the sprinkler law. In its entirety, it required that every new or existing building used in whole or in part as a school, hospital, infirmary, nursing home, nursery, orphanage, sanitorium or home for the aged, must be fully sprinklered if it is more than one story in height and of Type III or IV ("ordinary" or wood-frame) construction. It is estimated that up to now in excess of $4 million has been spent in the city of Chicago to comply with this sprinkler law, and at least another $3 million will be required before all of the affected buildings are in compliance.

The sprinkler law raised controversy before it was even passed. The two groups representing the great bulk of the combustible schools—the public and the parochial school systems—objected that such a blanket requirement could only have a detrimental effect and cause unnecessary expenditures of funds.

City officials, however, stuck by their original concept of where sprinklers are required for life safety, although the deadline for complying was extended from January 1, 1960, to December 31, 1960. What this means is that by the end of this year,



Groups of relays, a long row of test buttons, and a maze of wiring form the heart of a complex fire alarm system recently installed in one of Chicago's public schools. An auxiliary panel still must be provided and wired to automatically trip the city master box

but the final goal has not yet been reached

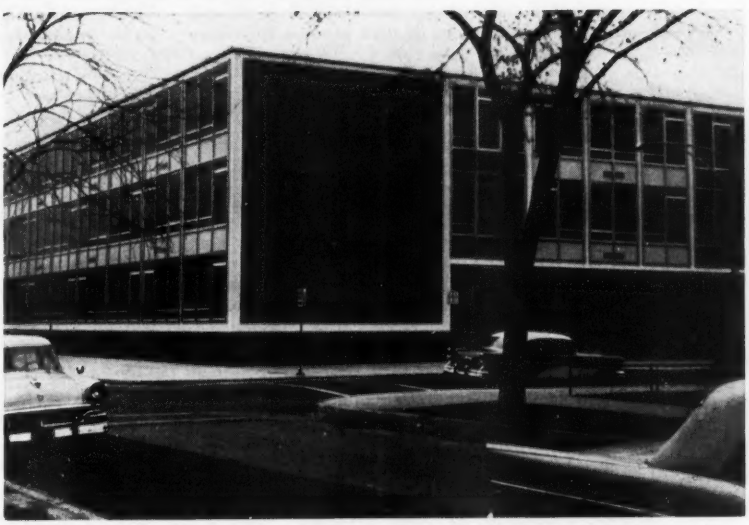
With original portions constructed in the 1880's, John Marshall High School in Chicago has recently been protected by partial automatic sprinkler coverage, automatic heat detectors in attic and storage spaces, stairwell enclosures and emergency lighting system

the city council expects nearly 500 school buildings in Chicago to be fully sprinklered—or be discontinued for school use. It is obvious now that there is no possibility that the deadline will be met.

Records which are being maintained by the fire prevention bureau of the Chicago Fire Department best indicate the scope of the job of sprinklering the schools and what has been accomplished. Of the approximately 1,200 school buildings within the city, more than a third require sprinklers. Public and the Catholic parochial schools together account for 80 per cent of the total; the balance are other parochial and private schools, including various buildings of the University of Chicago, Illinois Institute of Technology, and North Park College.

According to estimates now being made, approximately 120 of the sprinkler systems required in public and Catholic parochial schools will be complete and in operation by the end of the year. Most of the remaining ones will be under contract and in various stages of completion. Insofar as the other parochial schools and the private schools are concerned, they will have barely started on the program.

"We're satisfied with the progress so far," Captain Sullivan of the fire prevention bureau indicated a couple of months ago. "When you consider the complexity of the average system and that the installation usually takes months, the accomplishments have been really outstanding and are evidence to us of the sincere effort which has been made by most of the groups concerned to comply with the law.



The new Our Lady of the Angels school is typical of modern school construction. It bears no resemblance to the original structure destroyed by fire two years ago

Even though the city council failed to reconsider the all-encompassing aspects of the sprinkler law, some interpretations had to be made to avoid forcing the schools to put sprinklers where they were obviously not intended. For instance, many parochial schools are located in a wing attached to the church building, and by strict interpretation of the law, the church, also would have to be sprinklered. Again, over the years, additions of superior construction have been placed on hundreds of schools so that they connect with the old, "pre-building ordinance" sections of combustible construction. Inasmuch as the various sections are not separated by ap-

Continued on page 1153

Engine 1, one of the companies special-called to fill out fifth-alarm assignment, operates its deck pipe on Broadway

Member of Ladder 20, at right, gets set to use ladder pipe on fire roaring from top floor. Engine 31 is in foreground

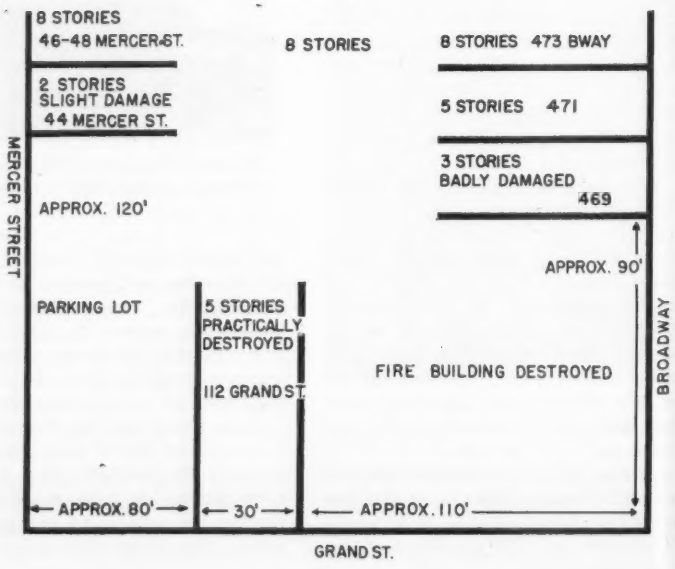
—Photos by Howard Carlson

THE COVER STORY

Three New York City fire fighters die in loft building fire

THREE NEW YORK CITY fire fighters died in a spectacular loft building fire on November 18. The men were: Lieutenant John A. McDermott and Fireman Francis J. Sammon, both of Engine Company 31, and Fireman John C. Cosner of Squad Company 8. The fire, described by newspapers as a "nine-alarm blaze," occurred in an area between Reade and Eighth Streets and Broadway and the Hudson River, notorious for fire fatalities and dubbed by Fire Commissioner Edward F. Cavanagh, Jr., "Hell's Hundred Acres."

The five-story building, 463 Broadway at the corner of Grand Street, was reportedly built 100 years ago, and was typical of the construction of the period. The interior was mostly wooden, without fire-stopping, with open wooden stairways and other vertical openings, concealed spaces and



cast iron columns. The outer walls of the building were stone-faced.

The ground floor of the building was occupied by textile and allied stores and the upper floors by textile concerns. Large amounts of fabrics were stored in the building, and the fire commissioner later severely criticized the poor housekeeping.

Sprinklers recommended

The captain of the company in whose inspection district the building is located had strongly recommended the installation of a sprinkler system in January 1959, and had stressed a month later that the open stairways constituted "an even greater hazard" and again recommended a sprinkler system. The sprinklers were not installed nor were the stairways enclosed. However, there was an Automatic Fire Alarm Co. fixed-temperature fire-detection system installed in the building.

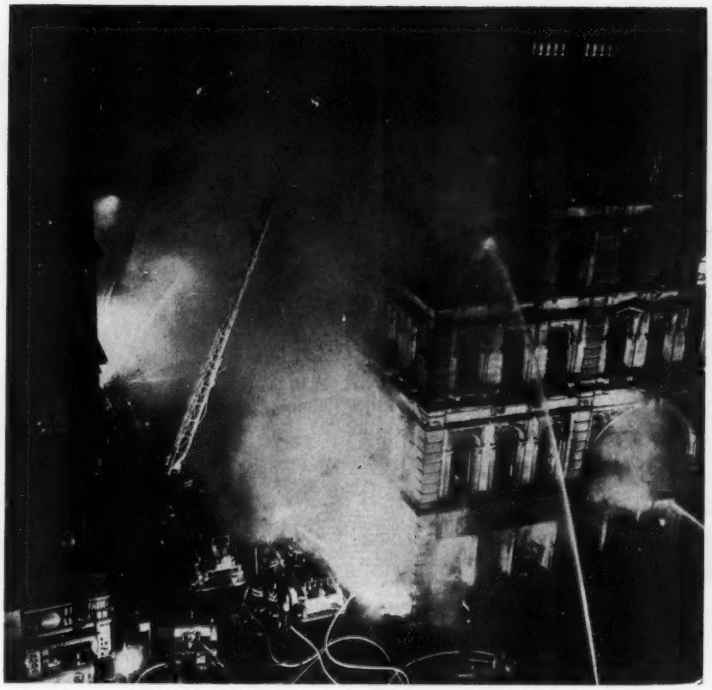
Since the fire broke out after 5 p.m. on a Friday, a day on which buildings in the area are customarily vacated early, there was little or no life hazard to occupants. As subsequent events showed, the construction and general housekeeping posed a life hazard to the firemen.

The fire was discovered by a tenant who smelled smoke shortly after 5 p.m. He ran from his lace and embroidery store and saw smoke pouring from the doorway of the adjacent occupancy. As he ran back to telephone for help, the first fire companies turned the corner. Engine Company 31, Ladder Company 20 and the chief of the Second Battalion had rolled at 5:12 p.m. in response to a special building alarm, 3-199-28, initiated by the A. F. A. detection system.

U. S. Weather Bureau records show that the weather was partly cloudy. At 5 p.m., the temperature was 53°, the humidity 65 per cent, and the wind S/E at 9 miles per hour. By 6 p.m., the temperature had dropped one degree, the humidity was 58 per cent, and the wind had shifted to east at 10 miles per hour.

Initial operations

The first companies to arrive met dense smoke and intense heat rising from the basement. Engine 31, under command of Lieutenant McDermott, stretched a 2½-inch line into the store and down a stairway about 30 feet in from the Broadway entrance and approximately at the center of the store. Two wooden skids, used to slide huge bolts of fabrics into the below-ground storage area, partially blocked the stairs. They did not, however, greatly impede the men from advancing their line into the basement. The fire fighters could not immediately locate the seat of the fire, apparently hidden between the basement ceiling and the store floor. They sprayed the walls and ceiling in an attempt to cool the basement, but the spray fell back on them scalding hot.



Grand Street side of the fire and burning building to west are obscured by pall of smoke. More than 50 pieces of apparatus and 350 firemen fought fire
—UPI photo

Second alarm nearby

Meanwhile, Box 98, Gold and Frankfort Streets, had been sent out for a fire at 74-76 Gold Street, less than a mile south of the Broadway-Grand Street fire. At 5:16 p.m., Box 199 was transmitted, calling Engines 55 and 13, Ladder 8, Squad 8, the chief of the Fifth Battalion and the chief of the First Division to Broadway-Grand. Members of Squad 8, wearing self-contained breathing apparatus, immediately entered the basement to assist and possibly relieve Lieutenant McDermott and his men.

A 7-5 signal, indicating that all first-alarm companies were operating at Broadway-Grand, was transmitted at 5:25. Four minutes later, a 7-5 was sent out for Box 98, followed a minute later by a second alarm for the Gold Street fire.

Trapped

At about the time that 2-2-98 was sounding in the firehouses, Lieutenant McDermott decided the basement was untenable, and ordered the men to back out. Firemen Robert Barnickle and Royal Fox of Squad 8 led the way back to the stairway. Firemen Cosner and Sammon followed and Lieutenant McDermott was last. When Barnickle and Fox reached the bottom of the stairway, they found it clogged with bolts of materials. Evidently, several shelves at the head of the stairs, which had been heavily laden with bolts of fabrics, had been knocked down by the hose stream. In addition, the skids were now wet and slippery. The men had managed to maintain contact in the basement, and as Barnickle and Fox fought their way up the clogged stairway, they were certain that their companions were still close behind them. Above ground, the second alarm was being sent in. Since some First-Division companies had already responded to the second alarm on Gold Street, the dispatcher was forced to send out a "dispatcher's third" to fill out the second-alarm assignment for Box 199.

While the fire fighters were attempting to escape from the basement, there may have been a back draft there. In any event the heat evidently increased greatly and rose through the vertical openings in the building, and spread the fire to all the upper floors.

Although the fire now dangerously

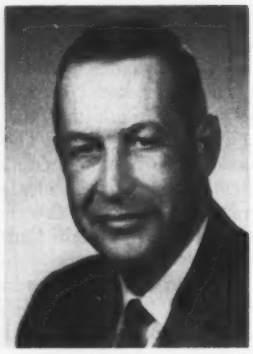
Continued on page 1133

Knocking down flames with hose stream to allow raising of ladders in early stage of fire (Photo 1)

With flames knocked down, firemen can carry booster line up the ladders for close-in attack (Photo 2)

MAKE USE OF PHOTOGRAPHY

Properly employed, photographs can assist fire chiefs achieve more effective operations



The author is senior safety engineer, Industrial Safety Department, Kodak Park, Eastman Kodak Company, Rochester, N. Y.

By EARL R. WALLACE

PHOTOGRAPHY until recently, has not been used to any great extent by fire departments, except in some of the large communities. Today, however, photography is gaining importance in fire department thinking across the nation and many fire chiefs are availing themselves to this tool which can provide valuable assistance.

Photography has been known to most related fields as an adjunct to their educational program and many fine examples of training pictures are available throughout industries, libraries, and schools.

Training uses

Training is one of the most important functions of a fire department since every firemen must know what to do and how to do it. Visual training aids can often assist in teaching fire fighters the proper techniques by displaying tactics employed at actual fires. Slides are one of the best ways of obtaining information on fires. A simple 2 x 2 camera can record an accurate description of any fire forever. Or, if a 35mm camera is available, it can be used with color film and the slides come back from the finisher already mounted for immediate projection. Projectors now on the market do not require special mounting of slides in glass or aluminum holders. In addition, black and white enlarged prints can be made from the same color film for display purposes.

Some of the accompanying photographs, made from slides, demonstrate how simple record pictures taken at the time of a severe fire can prove valuable for training later on. The slides can also serve in many other ways as well—to give a long-term record of damage, intensity of the fire and of general character.

Pictures also provide an effective visual means of describing the value

of protecting a ladder crew. In Photo No. 1, note the use of hose stream to knock down the flames above the ladders being raised. Photo No. 2 shows the flames knocked down and the firemen carrying line up the ladders.

It is difficult to describe to a group of recruits the intensity of a barn fire. Photo No. 3 dramatically shows this and at the same time depicts how firemen approach a fire of this nature working from the windward side in back of their hose stream to take advantage of every bit of protection provided by the water and the wind.

Investigating arson cases

One of the most serious crimes known is arson and capture of an arsonist sometimes is most difficult. The investigation of each fire cause is of utmost importance and knowledge regarding causes, implemented with photographs, can be of great assistance in such work.

Thorough examination of the scene by trained arson investigators many times leads to legal evidence concerning set fires. Such evidence can best be recorded with the camera, because, (1) small details can be enlarged; (2) entire locales can be shown; and (3) relationship can be depicted. Together, they may be used to piece together the facts.

The difficulty in proving arson, in the absence of any admission by the defendant, is so great that every technical aid available should be brought to bear on the investigation. The choice of photographs can be guided largely by a broad definition of the offense — the willful and malicious burning of property, usually a business building.

The use of photography in arson investigations is sometimes a lengthy operation extending over a period of days. It should begin as soon as possible, with pictures of the fire in progress, and continue through the period of searching for the evidence of planted incendiary materials and other objects which suggest prearrangement. Making photographs during the fire will establish the following:

1. Area of the origin.

2. Rapidity, direction, and manner of spread of the fire.

3. The nature of the burning substances as indicated by the steam, color of the smoke, and the color and size of the flames. (The color of smoke and intensity of flame often indicate whether or not an accelerant was used. For this record, motion pictures should be made on 16mm color film, Type A.)

4. The progressive stages of the burning shown from various angles as significant changes take place. A time log should be maintained to show when each still photo or movie sequence was taken.

5. The arrangement of windows and doors.

6. The identity of spectators (often the arsonist will return to the scene to witness the burning) can be recorded on black-and-white film.

Photographs should be made during successive stages of the clearance and search after the fire. Pay particular attention to the details in the burned and charred areas. Black-and-white film will suffice. Since the areas of interest are blackened and therefore reflect less light, be careful to avoid underexposure. Such scenes usually require two to four times more exposure.

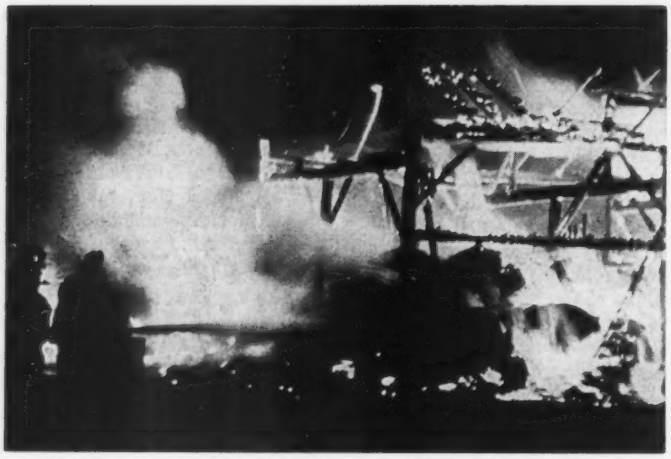
Photograph the building exterior from all sides to identify the structure and to show the damaged areas. Special attention should be given to the doors, windows, and shades. The arsonist may have drawn the shades to conceal his operations, or he may have arranged the doors and windows for the purpose of accelerating the fire.

You should make every effort to photograph important evidence in the building interior before it is disturbed by the firemen's operations. All items should be photographed carefully, since they relate to the most difficult element of proof, namely, the intent. Some of the things to look for are:

1. Incendiary devices and materials, such as wires, candles, match books; trailers, excelsior, paper, cloth; gasoline, kerosene, other combustible liquids; and empty containers.

2. Significant arrangements. Arson for profit is planned with a view to burning special objects or areas, in addition to the objective of general destruction. It is of great importance to photograph any special arrangements that indicate the plan of the arsonist. Representative subjects of photography for this purpose include documents, such as (a) ledgers or business records, purposely exposed to aid their burning; (b) closet doors left open to expose the contents to flames; (c) property, in closets or elsewhere, which has apparently been substituted for more valuable posses-

In taking pictures for possible arson evidence, give special attention to the area of origin near supporting columns in this case



How firemen approach a "hot" fire from the windward side and in back of their hose, getting double protection from wind and water (Photo 3)

Inspection picture taken by the Fire Prevention Bureau, Louisville, Kentucky

sions; (d) evidence of other crimes exposed for rapid burning; (e) interior openings, such as fire doors, transoms, and ventilating systems arranged to promote draft; (f) time indicated by electric clocks, to set the time of power failure; (g) protective devices, such as sprinkler systems turned off or their alarms altered to render them ineffective; and (h) tampering with gas pipes, electrical wiring, or electrical apparatus to create a dangerous condition.

3. Burned areas. Photographs of the burned regions will show damage if you give special attention to the area of apparent origin. Often several separate fires, each near wooden supporting posts are started in one building in the arsonist's hope that the columns will burn and the floor above fall to conceal the intended burning. These likely areas are often determined easily from information given by witnesses and from a study of the debris. The firemen themselves are your most valuable source for this information.

4. Overhaul series. The photographer must be on hand to record any evidence which is uncovered during the overhaul and search of the fire scene. Liaison should be established with the firemen assigned to this job so they will watch for clues and summon the photographer to record them.

The path of a fire is sometimes followed by observing the intensity of the fire as shown in its effects, such as the charring of uprights. In particular, this path is indicated by the so-called "alligator pattern," a checked design observable on wood. Cross, or side lighting, will reveal these best in your photographs. At the point of origin, the segments of this pattern are relatively small and the charring is deepest. Photographs should be made of this area. Other shots of the effects of the fire and the reconstruction of its path can be planned from this starting point.

Special attention should be paid to evidence of the use of kerosene, gasoline, or some other combustible liquid as an accelerant. The alligator pattern will be more severe where the liquid has seeped into the wood. It may even be possible to locate a pool of unburned accelerent which has seeped through to a floor below the fire level.

A series of photographs appended to the report is of particular importance in an arson case. To help in locating specific rooms, this series should include a photograph of the entire building. Location of the rooms are then indicated by means of an overlay marked in crayon. A further aid to the understanding of the physical layout is a copy of the builder's plan. It provides the room measurements throughout the building.

Public relations

The dress uniform of the fireman is an attempt by the fire department to strengthen public relations. The wearer of the uniform wishes the public to know him for what he represents, but is this enough? Public relations should extend far beyond knowing what we represent. We all want the public to know us for what we are, what we do, and why we do it.

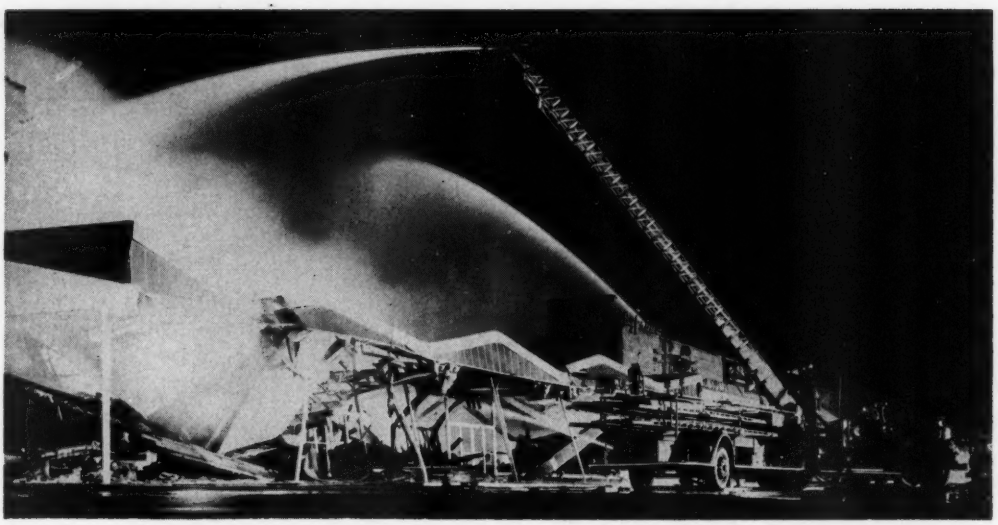
Firemen in particular need this type of public relations, perhaps more than other fields. Too frequently, the public's knowledge of firemen is based on legends of the "old-time" boys who were supposed to sit around playing cards or checkers, waiting for the alarm to ring. The public needs to know: (1) That firemen are trained in their profession; (2) firemen are concerned with prevention as well as protection; (3) about every real good job accomplished; (4) about the fire department's inspection program; (5) everything about fire departments.

How best can you accomplish this goal? One of the better ways, of course, is effectively and dramatically using your photographs. We all know what television has done for marshals, sheriffs, and police departments. Why shouldn't some of the public relations value of 16mm pictures and slide presentations show how your firemen protect public property?

Use with Spring Clean-up

Perhaps the best way to start a good effective public relations program is to use 35mm slides in conjunction with the spring clean-up program and the fall fire prevention program. Slide presentations can effectively show how uniformed firemen make home inspections, how they point out the hazardous situations which are the prime causes of fire, and how the fire department personnel meet with civic leaders. These can be used either on television fill-ins or in presentations to service clubs, women's clubs, PTA's, and to schools. Sixteen or 8mm films can be made on the same subject, showing actually what firemen do.

An informed public will better respect the fire department for what it represents, and what it is. By proper employment, photography can help bring to the people the fire department story. □□



Mutual-aid forces employ heavy streams in effort to knock down shopping center blaze—Photo by Will Gainfort

Fire walls limit destruction during shopping center blaze

By WILLIAM C. PECK

A LARGE MERCANTILE store, occupied by J. J. Newberry & Company, was destroyed by fire the night of September 3, in East Brunswick Township, N. J. Measuring 100 by 175 feet, it was the largest of 22 stores in the Mid State Mall, a shopping center on Highway S-18 in this central New Jersey community. Before the fire was brought under control, eight departments had joined the battle.

The fire was discovered at 11:44 p.m. by a passer-by and the East Brunswick Independent Fire Company No. 1 responded to the telephone alarm with two pumpers and a utility truck and 33 volunteer firemen under the direction of Assistant Chief Louis A. Force. Upon arrival, one 2½-inch and two 1½-inch lines were stretched at the rear of the store, one line being taken to the roof and two lines advanced inside by members wearing self-contained masks. At 11:53 p.m., Chief Force requested the assistance of the Old Bridge and South River departments and minutes later the Brookview Fire Company.

The fire had already entered the inaccessible space between the ceiling and roof and extended through the air-conditioning ducts. The intense heat forced the firemen inside the store to back out and the roof soon became untenable. As fire broke through the roof, a ladder pipe was placed into operation and hand lines were directed into the interior through the rear entrance. The lack of windows at the rear of the store handicapped operations in this area. At 12:25 a.m., mutual aid was requested and apparatus from the Milltown, Sayreville, South Old Bridge, Melrose and New Brunswick departments were dispatched to the scene according to plan.

As the fire was spreading rapidly toward the front of the store, the mutual aid companies organized their attack from the parking lot in front of the shopping center. A second ladder pipe, a portable turret and numerous hand lines were brought to bear. About 1:30 a.m. the roof collapsed and grave concern was felt for the adjoining stores as well as all buildings in the area, including a new 48-lane bowling center. Fire walls on either side of the fire building held, but flames jumped a low parapet and spread to the roof of one adjoining store. Streams directed from an adjoining roof were able to control this extension and only small damage resulted.

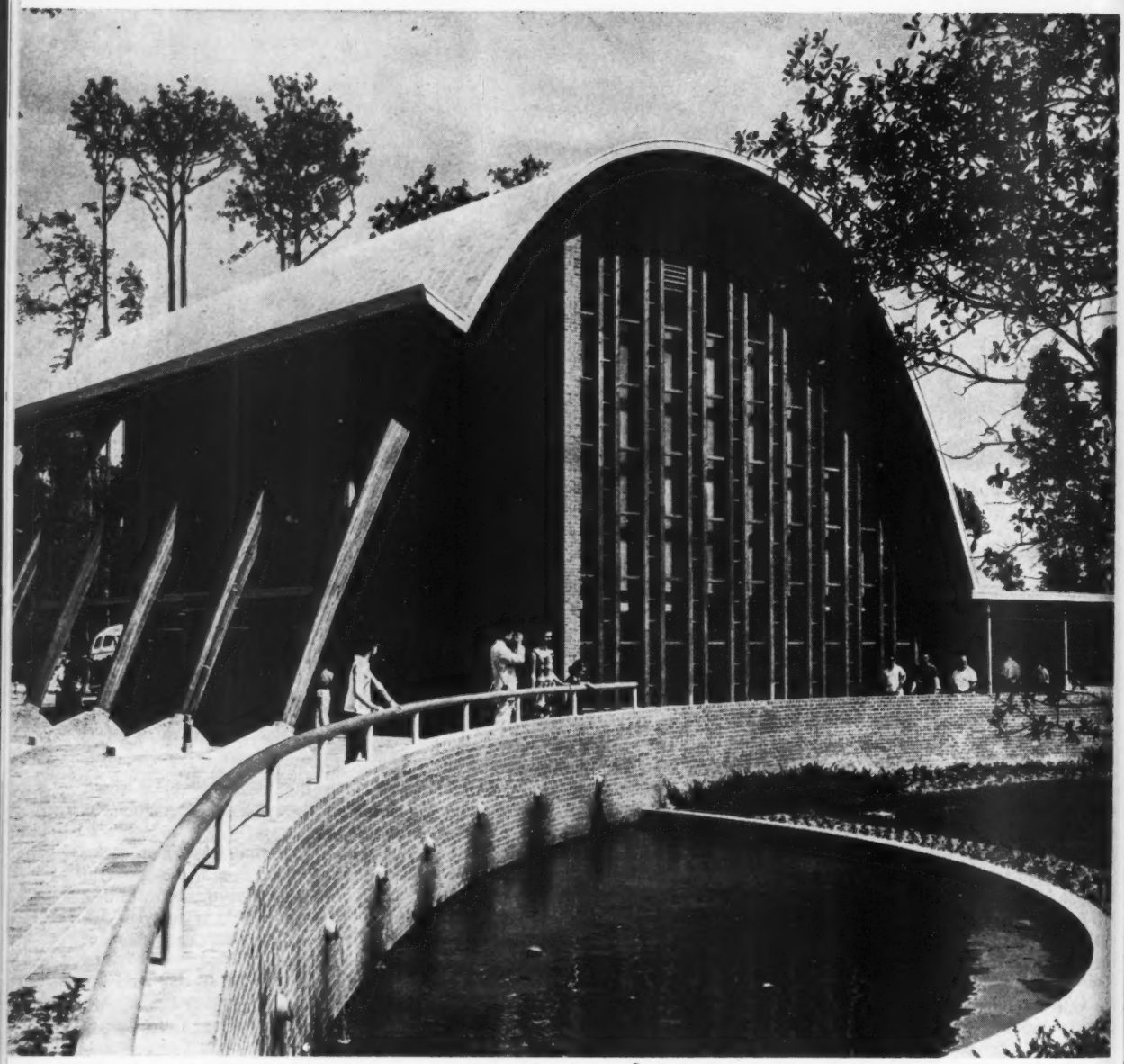
The fire was under control by 4:30 a.m. and the first outside companies were released. Members of the East Brunswick Fire Company remained on duty until 4 p.m. overhauling.

The fire building was a complete loss with the exception of a small section of the garden center adjacent to the main store. Water damage was suffered by adjoining stores and smoke damage extended four to six stores in each direction. Factors contributing to the large loss include delay in discovery, lack of automatic sprinkler protection, inaccessible space between the hanging ceiling and roof and the large undivided area.

The investigation into the cause of the fire was headed by Chief Arthur Z. Johnson. It was determined that the fire originated in a room containing electrical equipment for the air-conditioning system, but at this writing the exact cause is unknown.

This was the second blaze in the store within the past two years. On November 13, 1958, employees discovered a fire in the roof of the building near the incinerator stack, later found to be a faulty installation. At that time, fast work by firemen limited damage to a 20-foot section of the roof.

Rescue squads from East Brunswick, South River, Milltown, Sayreville and South Old Bridge treated 15 firemen for various injuries including nail punctures and cuts and for smoke inhalation. Members of the women's auxiliaries of several of the departments were on hand to serve coffee and sandwiches to the firemen. □□



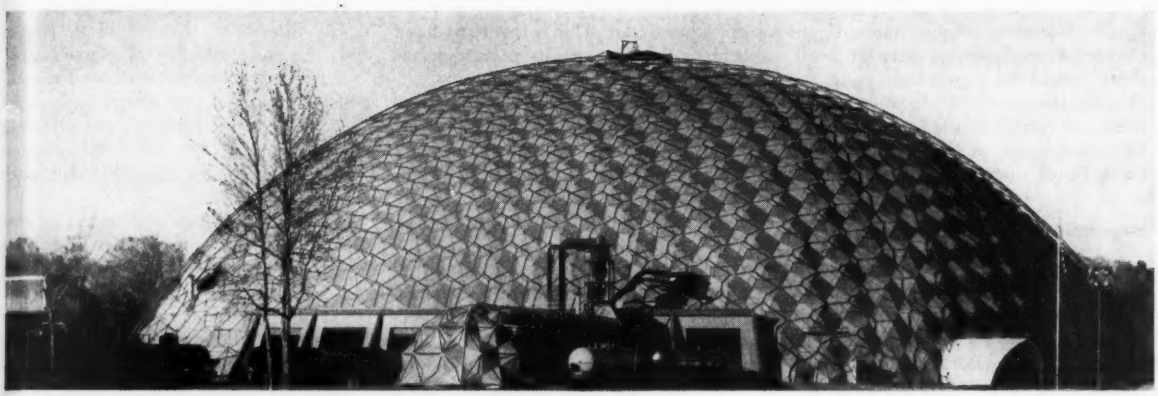
Recreation center, Glasshouse Point, Jamestown, Va., is striking example of glued laminated timber construction—AITC photo

TRENDS IN **modern building construction**

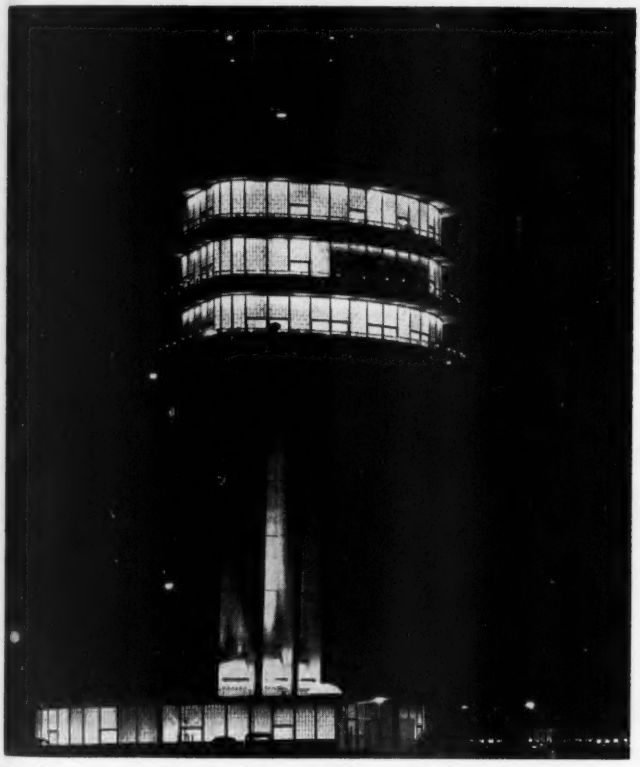
DEVELOPMENT of new building materials and new uses for existing materials, new methods of erection and new concepts of building design have produced a variety of new types of construction quite unlike the conventional. For example, many buildings have been erected in recent years which make extensive use of panel walls of glass.

From the standpoint of fire protection, all glass exterior walls introduce two problems. Previously masonry exteriors could be depended upon to provide protection against exposure fires, but all-glass exteriors afford no such protection. The obvious answer is to substitute space.

The second consideration is to develop a means for restricting as far as possible, the spread of fire within a building from one floor to another by way of the exterior. With all masonry exteriors it was very common to have at least 3 feet of masonry between the top of one window and the sill of a window above. Since this vertical separation is not inherent in glass exteriors, it is necessary for codes and standards to specify a vertical separation of at least 3 feet provided by noncombustible materials having a fire-resistance rating of at least two hours. Such separation is needed in buildings containing moderate or high-hazard occupancies.



Steel hemispherical dome serves as Union Tank Car Company repair shop near Baton Rouge, La.
—Courtesy Union Tank Car Co.



Striking new control tower at Newark Airport employs prefab aluminum and plastic panels. Structure is equivalent in size to 12-story building
—courtesy Port of New York Authority

By EVERETT W. FOWLER

*Chief Engineer National Board of Fire Underwriters**

Laminated timbers

Most fire protection persons think of heavy timber construction as being a building made up basically of exterior walls of masonry and interior framing of heavy timber columns and beams considered slow burning.

In recent years, glued laminated heavy timber has made an appearance in the construction field and is becoming increasingly popular. The first question that comes to mind is whether the glued laminated lumber is comparable in fire resistance to solid sticks of lumber.

Tests indicate the kind of glue used is a major factor in fire resistance. If the glue is such that it permits delamination under fire conditions, the laminated lumber would not have equivalent fire resistance. However, where the glues do not permit delamination, the fire resistance is comparable to solid lumber.

From information currently available, it appears that most of the glued laminated timbers being fabricated today use glues which will perform satisfactorily under fire conditions. With one exception, the standards of the timber industry require the use of such glues and it is understood that the necessary changes are being processed in the standard which does not now specifically require the use of these glues.

The manufacture and efficient design of glued laminated lumber necessitate the use of timbers slightly smaller in size than conventional heavy timbers. It will be noted in the illustration that portions of the heavy timber arch extend beyond the exterior walls of the building and that extensive use is made of timber mullions in one wall.

The National Board of Fire Underwriters has cooperated with the American Institute of Timber Construction in development of a standard for heavy timber construction which recognizes slightly reduced sizes of timbers and also provides for conditions under which it is considered satisfactory for portions of timber framing to extend beyond the exterior of a building. The contemplated changes do not involve any significant reduction in cross sectional area of timbers. Basically horizontal separation is required where portions of heavy timbers extend beyond exterior walls.

Where the timbers are used as mullions for windows or as window frames, it is not believed there is any problem involved, assuming there is sufficient horizontal separation so that the limitations on window area do not

*A condensation of a recent talk delivered by the author to the New York Chapter, Society of Fire Protection Engineers.

apply. However, if the timbers are otherwise used in an exterior wall, there would be a question as to the classification of the wall, since one of the basic requirements for heavy timber construction is that exterior walls must be of noncombustible material.

Hemispherical domes

An aluminum dome was recently built in Honolulu for use as a convention hall. Other similar structures have been built in Virginia Beach, Va.; Abilene, Kans.; Borger, Tex.; Oklahoma City, Okla.; and Caracas, Venezuela. These have been used as convention halls, factories and banks. A similar structure, but made of steel, was built for Union Tank Car Company's repair shop near Baton Rouge, La. It is truly a roundhouse.

These buildings do not have walls as such and are considered essentially of noncombustible construction. The question naturally arises what portions of the buildings should be considered as walls? Another question is whether the aluminum would vaporize before sprinklers operate, assuming, of course, that sprinklers were installed for the protection of the contents? Also, does the fact that aluminum melts at relative low temperatures give any advantage from a fire protection view-point in that venting would be available under severe fire conditions? The current thinking is that if a fire-resistance rating is considered necessary for exterior walls, protection should be provided for the exterior to a height of 15 feet above grade.

Thus far, it is believed that automatic sprinklers would function satisfactorily in aluminum domes. There does not appear to be any sound basis for assuming that the aluminum dome would not provide the required support for sprinklers under fire conditions. It is expected that the sprinklers would operate and reduce the temperatures to a point below that at which aluminum would melt or lose sufficient support strength.At the present time there are no reliable data available on which to base conclusions regarding possible venting advantages.

Plastic buildings

Perhaps the most unique design of a structure that has been developed to date is the air-supported building which has no members providing structural stability in terms of conventional design. Briefly they are plastic structures supported by air pressure maintained within them. The largest air-supported structure erected to date supports a roof load of 50 tons by a pressure of only 25 to 30 pounds per square foot. This is less than 1 per cent of the pressure in an automobile tire.

These buildings have been used mainly for temporary storage but one has been used as an office. The structures are prevented from rising by being staked down like tents or anchored along the edges by sand or water ballast.

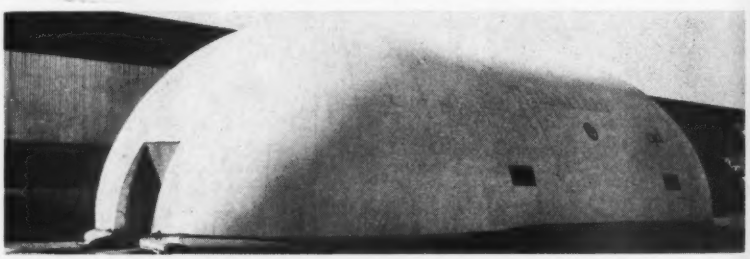
This type of structure suggests a lot of questions. What about the combustibility of the plastic? How is protection provided for the contents since there is nothing to support sprinklers? What happens if the device providing the air pressure should fail? Can anything be done to provide some type of protection equivalent to that provided by walls having fire-resistance ratings? Will the plastic collapse under fire conditions, thereby falling on the contents and preventing hose streams from being applied directly to the seat of the fire?

As far as is known, all plastics that have been used for this application are of combustible nature and therefore from fire safety considerations such a structure would be somewhat similar to a canvas tent. Conceivably plastics could be developed which might qualify as a noncombustible. Any limitations that might be placed on the combustibility of plastics must, of necessity, depend on how the plastic material behaves under various fire conditions. Until more is known about these matters, it is difficult to suggest an approach to standards for such structures.

Automatic sprinklers cannot be considered for protection because there is no support for the piping. There is a real question as to the value of providing portable fire extinguishers or standpipe and hose for use by occupants as it may be that a relatively small fire could cause collapse of the structure before effective action can be taken to extinguish it.

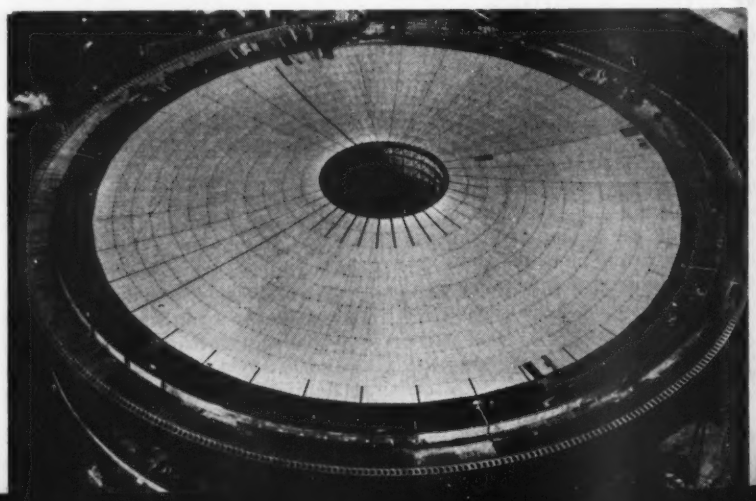
The question of possible collapse due to failure of the air pressure is of paramount importance. It is claimed that relatively large holes can be placed in the structure without causing collapse. This information was not based on any fire tests and it appears that some will be needed before a reasonable answer to the question can be obtained.

Test data are also needed on the possible effect the plastic would have in preventing water from hose streams from reaching the seat of a fire in the event of collapse. There is some think-



Portable warehouse entirely supported by air contains 42,000 cubic feet of storage space. Made of nylon fabric coated with vinyl plastic*—courtesy United States Rubber Co.*

United States Pavilion at Brussels World Fair employed prefab aluminum and plastic panels as roof structure*—courtesy Kalwall Corp.*



The author joined the National Board in 1928 following graduation from Worcester Polytechnic Institute. He was named assistant chief engineer in 1948 and appointed director, Codes and Standards division in 1952. He became chief engineer in 1958.

ing that the plastic would melt in any area involved in fire and therefore hose streams could be applied directly to the seat of a fire. Others feel this may not be the case and plastic would simply form a shield.

Prefab panels

The United States Pavilion at the recent Brussels World's Fair points up two interesting developments in building design. There were no interior structural supports such as columns within the building, thus permitting an entirely open space which provides for complete flexibility of layout. Of particular interest is the type of panels that were used in roof structure. They consist of an aluminum I-beam grid core with reinforced translucent plastic faces bonded to the grid with a waterproof resin. Generally, the grid core forms rectangles 8 inches x 20 inches and the facing plastic material is about 1/16 inch in thickness. The thickness of the entire panel varies, but those generally used have a total thickness of 1-9/16 inches or 2-¾ inches. The aluminum framing is welded.

These panels have been employed in a number of buildings such as schools, motels, manufacturing plants, and the control tower at Newark Airport. There are two considerations of interest to fire protection engineers, the combustibility of the plastic and the broad use of it as a roof.

These panels were developed mainly for the purpose of providing a stiff structural system which will permit daylight to enter the building. As such, they are intended primarily to take the place of conventional glass windows. Where they are used in rather limited applications it is believed appropriate to apply the limitations of glazing material in the National Building Code. Under the code, glazing material of other than glass must have a flame-spread rating corresponding to that required for interior-finish materials. If the entire wall is made of such panels, then the combustibility of the plastic-facing materials would determine the classification of the building.

Where the entire roof is constructed of plastic panels the question is whether the plastic could satisfactorily pass the test requirements for roof covering materials? At the present time, there is no knowledge of tests that have been conducted on plastics to determine whether they could be classified in accordance with the method of classifying conventional roof-covering materials. If this material is going to be used in buildings in this country in a manner similar to the U. S. Pavilion, it is believed it will be necessary that such test data be developed. However, where the panels are used in relatively small areas of a roof, then it would be proper to consider them as skylights and treat them accordingly.

A great amount of work has gone into the development of structural sandwich-panel components for walls and roofs of houses. Briefly, the sandwich panel is a stressed-skin type with its two faces bonded by an adhesive to a rigid and continuous or semi-continuous core. Core materials which have been used with varying degrees of success include paper, honeycomb, corrugated paper, foam glass, balsa wood and other wood grids, rigid urethane plastic foams, phenolic foams, dense fiberglass boards and foamed polystyrene in board form. The materials replace the wood frame as found in conventional dwelling construction and through their bond to the panel faces contribute to the high degree of structural strength of a sandwich-panel construction.

Since they will be used essentially as wall panels, their regulation from a fire protection standpoint will be by the same methods as used for conventional construction. It is also quite likely that these panels will be fabricated in such a way that the interior surface will also form the interior finish of a building. Where such is the case, they should, of course, be governed by the flame-spread-rating limitations by which other interior finish materials are controlled. It is not expected that the interiors of these panels will be such that open vertical spaces through which fire might spread will exist.

Future trends

A proposed apartment house to be erected one block from the loop in Chicago consists essentially of two cylinders. The interesting part about this design is that roughly one-third of each tower will be a parking ramp so that apartments will begin on the 20th floor. Proper safety for such buildings requires that there be a separation between the garage portions and the apartments by walls, floors and ceilings having a fire-resistance rating of at least two hours. The fire-experience record of parking garages has been very good. Nonetheless from the standpoint of proper municipal control and considering the size of such parking areas, together with the height at which people will be sleeping above them, it seems that it is appropriate to require this separation.

A proposed structure to be erected by the Hilton Hotel Corporation in San Francisco demonstrates what may be considered as a trend in building design. The hotel will have a parking garage in the central core of the entire building so that the occupants may drive their cars up to a point just outside of their rooms.

The NBFU had an opportunity to look at the preliminary plans and it did not appear that there were any major fire protection problems involved. The building is to be of fire-resistive construction and access from the parking garage to each room will be through a corridor which runs around the periphery of the garage portion. A person, after parking his car, will go through a fire door into the corridor and across it through another fire door placed at the entrance to his room. The walls of the corridor will have the necessary degree of fire-resistance rating and, of course, adequate ventilation will be provided for the garage.

In most cases, the developments outlined here have come about because of the need for light prefabricated building sections. The use of lighter material produces a saving in the cost of construction all the way down to the foundation as the structural supports can be of lighter members. Prefabricated sections may be manufactured by mass production methods in a remote building and shipped to the job site with what is hoped will be a marked saving in total cost. As with progress in any field, additional problems are created by new developments and fire protection engineers must constantly be alert to methods for providing proper degrees of fire protection. □□

Fire alarm voice amplification lightens fire instructor's job

By JAKE SIKEN
Supervisor of Fire Training
Phoenix, Arizona Fire Department

The author in his office conducts training session simultaneously for all stations in Phoenix

DUTY SCHEDULES and the distance between fire stations pose one of the most difficult jobs for a fire instructor—that of transmitting a lesson or series of training lessons to fire captains and fire personnel. By using the fire alarm communications system, Phoenix has overcome much of this difficulty.

In Phoenix there are 21 stations in a 110-square-mile area. Each of the stations is served by three crews working 24 hours on and 48 hours off. To get one training lesson to all stations either means a minimum contact of three times at each station or arranging classes for the captains as their duty schedules permit. In order to overcome these obstacles, it was decided to use the fire alarm voice amplification system to transmit one lesson simultaneously to all the stations, thereby requiring three days to give one lesson to all the fire personnel.

In April 1959, a test run was made on the use of the amplification system for training. At that time the semi-annual personnel evaluation program was explained to the fire captains. This method of training was the result of an employee's suggestions. From the instructions given over the system, each captain made the evaluation of his men. The training appeared successful and it was decided to give a training course on safety supervision in the same manner.

The voice amplification system, used to transmit this course, is a Vocalarm system used primarily for dispatching fire equipment, but it can be used for announcements of all types. Controls located in the communications headquarters make it possible for the dispatchers to transmit the program to a single station, a group of stations, or all stations.

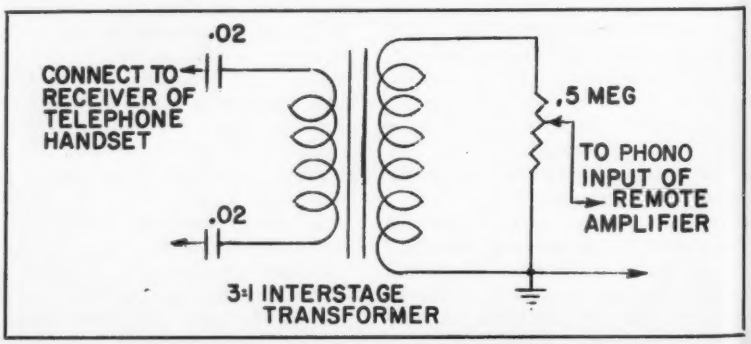
For training classes, it was desirable to have the training program originate outside the alarm headquarters. This eliminated any confusion that would result if a fire alarm came in while the class was in session. In order for the program to originate outside fire alarm headquarters, an amplifier, a microphone and a phone patch (the connecting link between a telephone and the amplifier), were installed in the office of the supervisor of fire training. The program was carried from the training supervisor's office to the alarm headquarters by means of the fire department cable, a distance of about 2 miles, where it was distributed through other cables to the stations. At each station the program was amplified through the station's loud speaker system. The phone patch between the telephone and the amplifier in the training office made it possible for any station to call by telephone and ask questions or be called to give answers to questions. The phone conversation from any station was heard simultaneously by all the other stations.

When a fire call was received by the fire communications dispatchers during the course of training, only the stations affected were dispatched. The training supervisor, by means of a stand-by indicator on the amplifier, was alerted that a fire alarm call was about to be processed. This momentarily interrupted the class, but after the companies were dispatched the training resumed. The companies dispatched were given a review later in the day by means of a tape recording.

In this manner the training supervisor, surrounded by experts on the

Continued on page 1160

Conversation between captain and training supervisor is amplified in all stations. Here, firemen listen as captain receives answer to a question



Method of connecting telephone circuit to remote amplifier

Evening scene at building front. Heavy smoke and construction of building prevented effective employment of hose streams at outset

High-pressure steam line blamed for million-dollar Harrisburg fire

By JOHN D. KLINEPETER

A FIRE that started 30 years ago erupted into the most costly blaze ever faced by Harrisburg, Pa., on May 27 last, at about 4:35 p.m. Before being brought under control 12 hours later, heavy smoke had felled at least 40 fire fighters, and flames threatened nearly a half block of the city's high-value mercantile district.

Completely destroyed were the Youth Centre at 307 Market Street and the Triangle Shoe Store at 305 Market Street. These structures were so badly damaged that city inspectors later ordered both burned-out shells razed.

Exposure areas suffering heavy water, smoke and heat damage were the Feller Building at 301-303 Market Street, the Capitol Shop and Dauphin Hotel at 309 Market Street, and the Yarn Center, a barber shop, a bar, a hat shop and second and third-story apartments around the corner, from Market to 17 South Third Street.

Hose streams impeded

The portions of the Youth Centre facing on Market Street were three-story with false fronts, false ceilings, and a maze of connecting rooms and passageways throughout the entire 95-year-old frame structure. The rear windows of the front portion were boarded over, screened with hardware cloth and covered over all with Insulbrick. False ceilings were supported on metal lath. These fell during the course of the fire and the metal and plaster formed inpenetrable shields that even master streams could not pierce.

The Capitol Shop selling draperies and uniforms was on the first floor of the Dauphin Hotel building. The hotel rooms and other facilities have been unused for a number of years.

On the west side of the main fire area was the eight-story brick, granite-faced-front Feller Building, with windows opening above the Youth Centre from the third story on up. Fire fighters could find little early advantage from the locations of these overlooking windows.

On the rear at Blackberry Street, the walls were brick, with heavily barred windows. Hose streams could not reach into the heart of the inferno because of the maze of rooms inside, with doorways offset.

The fire was discovered when a woman employee of the Youth Centre opened a door to a stock room in the front part of that establishment's basement. She was immediately driven back by a surge of intense heat, smoke and fumes.

The woman left the door open and ran for aid. An adjacent air-conditioning system immediately drew the flames and heat into the ducts and sent them whirling to the first-floor vents. The fire spread so rapidly that employees and customers evacuated the store in near-panic fashion, without wraps, pocketbooks or any personal belongings. Cash registers were deserted and left unlocked.

At 4:37 p.m. a box was struck at Third and Market Streets. Chief Robert M. Houseal, Sr., struck a second alarm at 4:43 p.m. and the third alarm at 5:16 p.m. This committed all 16 Harrisburg companies.

Firemen found it impossible to enter the store more than 12 to 15 feet, so Chief Houseal ordered them to break through the terrazzo entranceway floor with battering rams and sledge hammers to reach the below-the-street-level source of the fire.

Six Bresnan distributors, each on a 2½-inch line, were lowered into the basement area from the holes battered in the entranceway and the floor of a side display window. Other crews were having little success advancing two 2½-inch lines with straight tips and three 2½-inch lines with fog nozzles into the upper entrance to the store. The air-conditioning ducts spread the fire in unbelievably rapid

Continued on page 1146

Flow measurement importance in fire streams

By HENRY S. MORTON
Commander, USN

WHEN WE ARISE in the morning and step in to wash our faces, or fill the coffee pot with water, we are not much concerned with the pressure at the water works pump house or in the distribution main. In fact, it seldom enters our mind, but the quantity of water flowing out of the tap is of vital importance to us. If the rate of flow is slow or ineffective, it delays us in accomplishing a specific task. It is not only aggravating and annoying, but it may affect our entire day's routine work or pleasure. In contrast, the fire service has been taught to think and function using "pressure" as a criterion for operation and this concept of arbitrary pressure, as used in the over-all system, seldom indicates the correct flow.

Watch water flow

One of the great errors in judgment in water application occurred during World War II when the SS Normandie fire, out of control, was deluged with huge quantities of water causing the ship to capsize, later being declared a total loss. On this occasion, emphasis was placed on the fire stream pressure and range wherein the quantity of water flowing was inadvertently overlooked in the excitement. Few ships, if any, have ever been sunk by fire. In such cases they are usually sunk by fire fighters applying too large and ineffective quantities of water into the hull structure and disregarding the removal of the accumulated water. It has always been considered good damage control practice to remove as much water as is being applied in fire fighting. To accomplish this, one must know the total flow with a reasonable degree of accuracy in order to capably institute removal procedures.

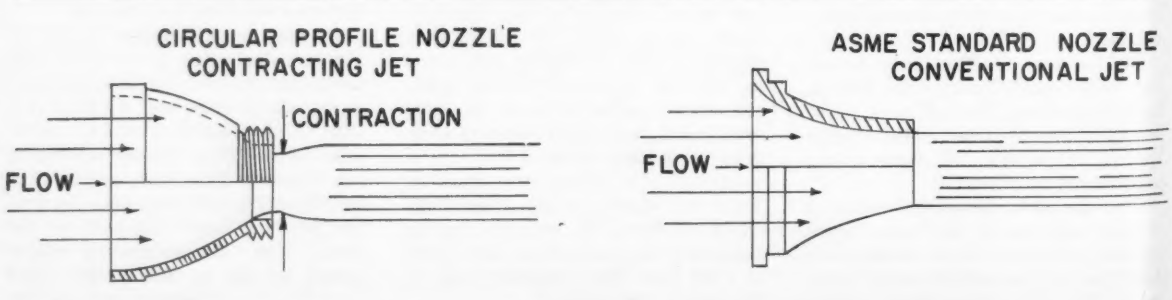
The nozzle through which the extinguishment fluid flows is the only device which directly contributes to the effectiveness and the rate of fire suppression. The purpose of the nozzle is to efficiently convert the total energy of the fluid flowing in the system to kinetic energy at the throat of the nozzle where the forces of the fluid are transmitted to the burning material in various forms, such as solid streams, foam, fog, spray, etc. It is therefore necessary to be able to control, at will, the total energy at the nozzle in order to obtain the desired stream characteristics. Retarding and extinguishment of fire can occur only when the coolant is capable of carrying away heat at a faster rate than that which is generated by the burning materials.

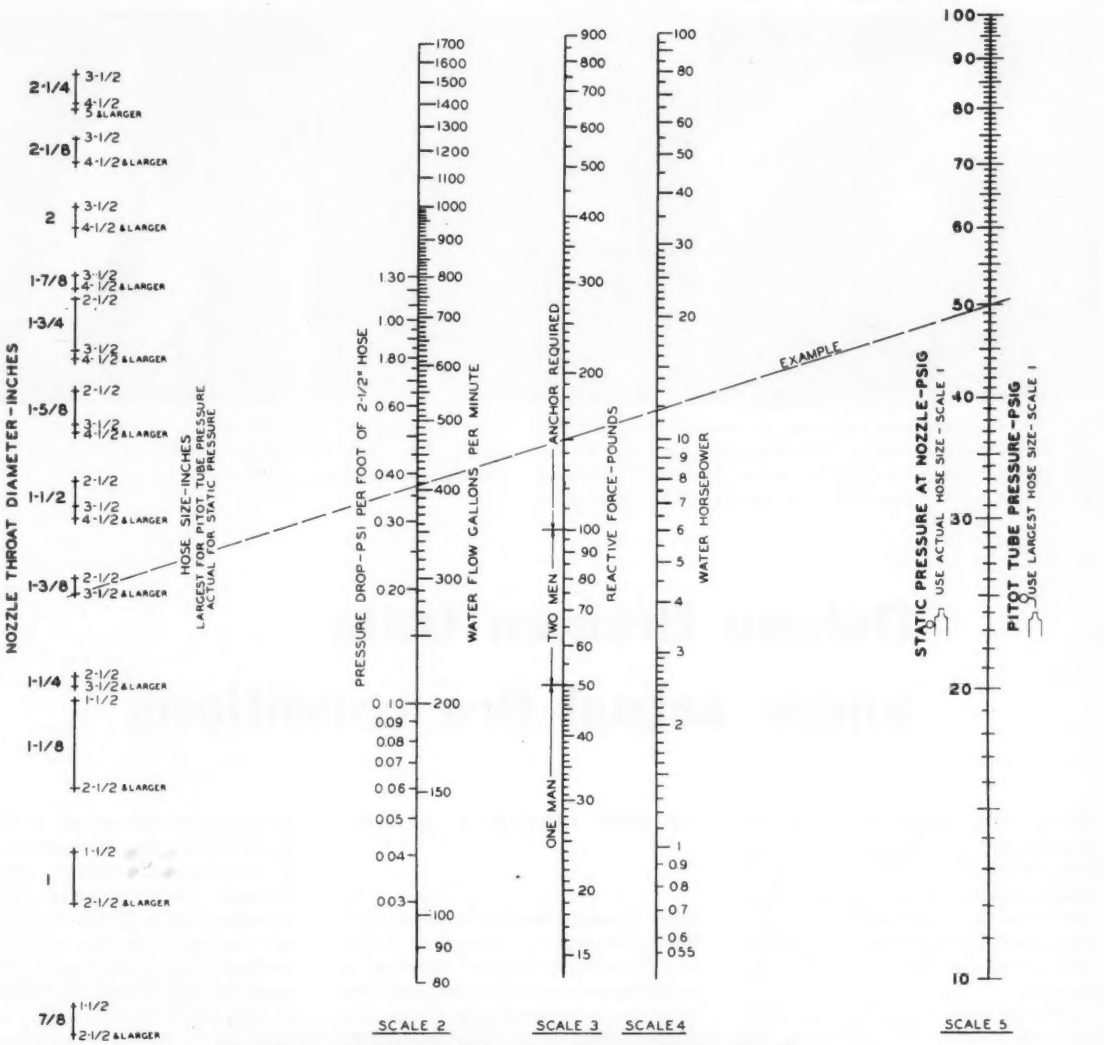
Considering the desired stream characteristics as a departure point for all practical problems in fire stream hydraulics, it can be reiterated that the elevation of the nozzle, the length of the hose lay, the size of the nozzle, the system losses, the source of water supply, and the operating rate of the apparatus are all supporting factors which contribute proportionally to the nozzle performance. The operating rate of the pumping apparatus cannot be correctly controlled until the quantity of fluid flowing in the system has been reasonably established. Applying the customary "practical guess" increases the probability of accidents. The calculation or determination of routine hose lay problems must commence with the establishment of the flow characteristics at the nozzle exit.

It has been quite obvious for many decades that the hydraulics of fire streams and the associate measuring devices have been neglected and have not kept pace with modern engineering, apparatus development and nozzle design. This situation has, no doubt, been brought about by the lack of technical knowledge and practical understanding, lack of demand for measuring instruments and the complexity of design of an economical, simple measuring device. Few departments, if any, have accurate measuring devices other than for test purposes and apparatus trials, and even these units are incapable of monitoring a continuous flow cycle.

The pitot tube which was developed in the same era as the steam pumping engine is still considered as a modern, usable, measuring device in the fire service although it is obsolete as the steamer itself. This measuring device has many built-in errors due to lack of understanding of "the impact tube theory" which inevitably creates discrepancies in design and in commercial manufacture. Furthermore, this type pitot tube is limited to use with conventional jets and is capable of indicating only the velocity head developed at the nozzle exit. Using proper numerical coefficients the velocity head is customarily expressed in terms of flow.

The contracting jets produced by newly designed nozzles have im-





CHARACTERISTICS OF FREE JET DISCHARGE OF WATER FROM ASME LONG RADIUS FLOW NOZZLE

COPYRIGHT 1960 BY COMDR. HENRY S. MORTON, U.S. NAVY

A STRAIGHT LINE CONNECTING POINTS ON ANY TWO SCALES WILL INTERSECT RELATED VALUES ON THE REMAINING SCALES.

EXAMPLE

ALIGNING THE POINT ON SCALE 1 REPRESENTING A 1-3/8" NOZZLE IN A 3-1/2" HOSE WITH THE POINT ON SCALE 5 REPRESENTING 50 PSI STATIC PRESSURE AT NOZZLE INDICATES A FLOW OF 408 GPM SCALE 2, A REACTIVE FORCE OF 150 POUNDS SCALE 3, AND A WATER HORSEPOWER VALUE OF 11.8 SCALE 4.

proved stream characteristics, greater range and are considered superior to the conventional type conical nozzles now in use. However, there are no economical measuring devices for use with this equipment. Rotating multi-jet nozzles, hollow stream jets, contracting jets, variable spray and other varieties of trade name nozzles cannot effectively utilize the pitot tube for flow measurement.

Therefore it appears that only one type of flow measurement device is economically available to fire service and its application is limited. During a recent field demonstration of a pumping apparatus the manufacturer casually announced, "This engine is now pumping 1,200 gpm." Observing the adjustable type of nozzle (variable flow), for which the pitot gage is unsuitable for nozzle measurement, the fog pattern, the suction lift of the pump, the hose layout and the lack of measuring equipment, it was virtually impossible to give a reasonable estimate of the performance of the apparatus. It appeared that the observers accepted the manufacturer's statement, in most cases with no reservation of doubt. This policy of "seeing is believing" without a yardstick of measure indicates a lack of technical knowledge in modern fire department operation.

It is apparent that a major question arises: Why is it necessary to measure the quantity of water flowing in a fire stream? A parallel question would be to say: "Why is it necessary to measure the nozzle pressure? In answer to the latter question, it is believed that there would be multiple explanations, and as many answers

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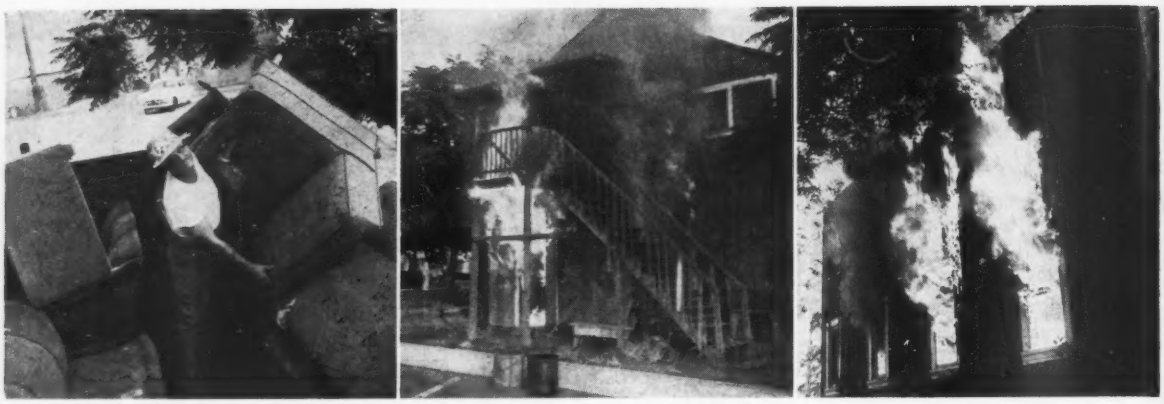


Left: Old furniture being unloaded to refurnish hotel and thus provide fire load normal for this occupancy. Center: This one-room fire was allowed to extend to second floor before attack signal was given. A 1½-inch line was advanced 65 feet to attack from within. Right: Hot two-room fire before interior attack was started. The blaze was extinguished in eight minutes with 150 gallons of water.—Photos by Bill Swanso, Delano

Delano firemen train under actual fire conditions

By CHIEF FRANCIS X. MULVEY

MANY FIRE officials would like the opportunity the Delano, Calif., Fire Department had to conduct an actual structural fire training program. At the same time the department cooperated with other city departments to remove a structure condemned by the city council.

Most structures available for training under actual fire conditions are small and in such condition that little more can be done than to stand by with outside hose lines to protect exposures and keep the embers from flying about the neighborhood. However, the old Pioneer Hotel at Tenth Avenue and Jefferson Street, a block south of the civic center and one block east of the main commercial area, was in sound condition. The exposure hazards were slight, and there was sufficient area for fire department operations. After removal of the building, the area was to be added to a municipal parking lot to relieve the parking problem in the business district. The old hotel structure was approximately 65 by 38 feet, two stories and attic, wood-frame construction, partitions standard 2 by 4-inch studs with 1-inch plasterboard covering. It contained 20 rooms or areas suitable for fire training. Windows and doors were in place, and in general, the building was in good condition.

Members of the fire department spent considerable time repairing broken plasterboard, rehanging doors, etc. To provide a normal fire load, a campaign was started to find sufficient furniture to refurnish the hotel. The slogan "Help Your Fire Department and Help Yourself" was used. Newspapers and radio pointed out the advantages of getting rid of old furniture accumulated around the home. The citizens responded, and members of the fire department picked up enough furniture, mattresses, rugs, etc. to refurnish the 20 rooms. At the same time this clean-up removed some serious fire hazards. All service connections (water, gas, and electric) were cut off; water, sewer and drain pipes were removed from the exterior of the building to reduce hazards of injury during the training exercises. The stage was now set for the two-week training program.

Planning for the program was coordinated by Richard W. Nevins, fire training instructor, California State Department of Education; the writer, and Captain Jesse Behrnes of the Delano Fire Department. Mr. Nevins had considerable experience in this type of program, and his help and technical assistance throughout the entire program was outstanding. It was decided that 14 fires or incidents could be completed during the two-week program. The preliminary program was submitted to Raymond F. O'Hara, city manager, for his approval and comments. It was decided that the weeks of July 11 and 18, 1960 would be the most suitable time. Letters were sent to 14 fire departments in the area inviting them to participate.

During the week of July 11, classes in planning the program and fire fighting strategy were held from 7 p.m. to 10 p.m. for a total of 15 hours per man. Size-up, rescue, exposures, confining the fire, extinguishing the fire, ventilation, overhaul, and salvage operations were covered. The results of a final examination showed that considerable knowledge was gained from the classes. The average attendance each evening was 25 Delano members and seven from outside departments. The classroom work was coordinated by Richard Nevins with Chief Mulvey and Captain Behrnes assisting.

The week of July 18 was devoted to actual fire fighting operations at the old hotel. The prime purpose of the entire training program was to gain actual fire fighting experience under control conditions, rather than technical information such as temperature rise. Fourteen fires were set ranging from a simple mattress fire to a four-

room fire on the second floor. Three simulated rescues were carried out at various times. The average attendance for this week was 31 Delano members and 14 from outside departments, for a total of 15 hours per man. Men from Shafter, Bakersfield, Tulare, Tulare County, Wasco, Strathmore, Pixley, Earlimart, Richgrove, Terra Bella, Kern County, Porterville, and Waukena took part in the program.

The fire fighting program was set up with five attack teams of four men on each team. Each attack team had a back-up team of four men to be used if necessary. The officer in command of the attack team was held responsible for evaluating the conditions and taking proper action. A team of qualified evaluators was selected to cover all angles of the fire, and after extinguishment, the evaluators pointed out the good and bad features of the attack. A command post was established, and the commentary over a public address system apprised the large gathering of spectators of what was going on inside the building.

Prelaid hose lines were placed to save time each evening, and the attack teams could select whatever lines the officer thought were necessary. Throughout the week the members involved in the fire fighting gained experience that would have taken years to accumulate under fire conditions. A definite pattern of aggressive fire fighting was established; all attack and extinguishment was made from within; all operating conditions were extreme; the outside tempertures ranged between 100 and 115 degrees, and veteran observers estimated the interior fires in the 1,000 to 1,500-degree range.

Officer leadership was stressed. The attack teams, made up of four men, were charged with the responsibility of extinguishing the main body of the fire; the back-up team was to cover extensions. Small teams were used to equate the number of men normally at an actual fire.

Three rescues were made with firemen acting as the victims. Two of the 14 fires deserve specific mention. One fire was set in the north section of the first floor and allowed to gain considerable headway and to extend to the second floor. It was extinguished with 150 gallons of water in eight minutes. A four-room fire on the second floor was allowed to gain considerable headway and intensity before starting the attack. It was extinguished with an estimated 500 gallons of water in 15 minutes and one 1½-inch hose line with a combination spray-straight stream nozzle.

It should be mentioned here that Richard Nevins had a free hand in selecting the location, size and intensity of each fire. The type or location of each fire was not known to the attack teams or the evaluators. When it was thought that the fire had reached the desired intensity to give the teams a good battle, the attack signal was sounded, the officer in command had to locate the fire and decide what equipment was to be used and the manner of attack.

The final burn-down of the building was on Friday, July 22. The fire was started in the northwest corner of the structure to take advantage of the slight wind, and the fire spread rapidly. Within 25 minutes the building had collapsed, and four hours later all lines were removed from the scene. Preparations for the final burn-down were quite extensive. All possible exposures had to be covered and flying brands had to be controlled. A deluge set was used to cover the southeast end, 2½-inch lines were placed to cover other exposures, and two fire department pickups were dispatched to cover the area for flying brands. Not one fire resulted from the burn-down. No injuries were reported for the entire operation, although, due to the extremes of temperature, a few men were treated for heat exhaustion.

Good public relations

It was a very successful training program. Although the Delano Fire Department has always stressed good public relations, this program helped to show the spectators that they had an aggressive and well-trained fire department. It also served the purpose of educating the public (through the use of the public address system) in how and why fire departments operate in a manner that at times seems to confuse the public. □□

October Fire Losses

Estimated fire losses in the United States during October amounted to $92,730,000, the National Board of Fire Underwriters has reported.

According to Lewis A. Vincent, NBFU's general manager, this $92,730,000 loss represents an increase of 30.3 per cent over losses of $71,160,000 reported for October 1959, and an increase of 13.3 per cent over losses of $81,845,000 for last September.

Losses for the first 10 months of 1960 now total $921,581,000, an increase of 5.7 per cent over the first 10 months of 1959, when they amounted to $872,047,000.

These estimated losses include an allowance for uninsured and unreported losses.

LOFT BUILDING FIRE

Continued from page 1119

involved practically the entire building, firemen advanced a line into the store and attempted to make the basement. Conditions were such, however, that to allow men to enter that area would possibly have sacrificed additional lives. The men broke holes in the deadlights in front of the building and breached holes in the cellar wall from adjoining buildings in efforts to reach their trapped companions. But, each time, tremendous heat and searing flames drove them back.

The fire spreads

The fire spread north to 469 and 471 Broadway, and west to another five-story loft building at 112-14 Grand Street and 44-46 Mercer Street. The fire and water combined to cause part of the building on Grand Street to collapse into a parking lot. The Mercer Street building was only slightly damaged. At the height of the blaze, flames soared 100 feet above the roof of the burning loft building, and could be seen across the East River in Brooklyn and in New Jersey. Embers caused a fire in a truck two blocks from Grand Street.

Meanwhile, a fourth alarm was sounded at 6:02, a fifth at 6:15 and a borough call at 6:31. The borough call summoned 15 engine companies and 5 ladder units that would normally respond to a fourth alarm at Box 219 in Brooklyn, to the loft fire. This combination of the fifth alarm and the borough call for a fourth-alarm assignment from Brooklyn caused the newspapers to describe the blaze as a "nine-alarm fire."

Mayor Robert F. Wagner and Commissioner Cavanagh, standing in front of the death trap as the bodies were brought out, vowed a crackdown on similar substandard buildings. Before the three fire fighters were laid to rest, Commissioner Cavanagh made good the promise by sending inspection teams into the area to search for violations of the fire laws. Several buildings and portions of others were closed because of violations.

Chief of Department George David said at 10 p.m. that the fires in all buildings except 463 Broadway were extinguished, and the blaze there was being confined to the cellar and top floor. Watch lines were maintained for a week.

Commissioner Cavanagh made no attempt at the scene to fix the cause of the fire or the reasons for its rapid spread. However, Chief Fire Marshal Martin Scott and his aides began an immediate investigation. □□

WHAT'S NEW

Among the Manufacturers

- products
- processes
- personalities

New Shallow-Draft Fire And Rescue Boat

Fire & Rescue Boats, Inc., 2525 South Ashland Avenue, Chicago 8, Ill., has been appointed exclusive national distributors of a new high-speed, jet-powered, shallow-draft fire and rescue boat manufactured by Buehler Turbocraft Co., division of the Buehler Corporation. Designed primarily for rivers, lakes, harbors and inland water ways, it is 19 feet long and is said to be capable of speeds up to 40 mph with a pumping capacity of up to 2,500 gpm. The boat has no propeller or rudder and it is claimed it can be turned in its own length. It can be readily removed from the water and hauled overland on a trailer

The craft is equipped with two deck pipes, two 2½-inch outlets on the aft deck, a 2½-inch wye outlet at the bow, and a 4-inch outlet at the stern for supplying land companies. Two 50-foot lengths of 2½-inch Dacron Bi-Lateral and two 50-foot lengths of 1½-inch Dacron Bi-Lateral comprises the normal hose load together with 100 feet of 1-inch booster hose on an aluminum reel. Adapters for each diameter are carried so that one 300-foot length can be stretched for lake shore fire fighting purposes while awaiting arrival of land companies. The hose load is limited to maintain shallow water maneuverability. Larger and faster boats of greater pumping capacity are also expected to be built in the future.

Alarm Horn Test Unit

The Falcon Alarm Company, Inc., 243 Broad Street, Summit, N. J., exclusive distributors of Clark-Cooper air horns and compressors, showed for the first time their trailer-mounted horn-testing unit at the September 15th meeting of the New Jersey Industrial Fire Chiefs Association held in New Brunswick. The trailer-mounted unit was developed by the Falcon Alarm Company because of repeated requests for on-the-spot tests and demonstrations of horns for municipal and institutional alarm use.

New Traffic Control

Rad-O-Lite, Inc., 1212 Myrtle St., Erie, Pa. has introduced its new electronic traffic control system designed to provide increased protection to emergency vehicles responding to alarms. The unit employs a small crystal controlled transmitter on the vehicle which activates tone-controlled receivers at the street intersection traffic lights. A white indicator light on the traffic light housing flashes to notify the vehicle operator that the intersection is under control of the system. The system operates in the VHF band.

Electro Switch Acquires Leonard Rotary Gear Pumps

The Electro Switch Corp., King Avenue, Weymouth 88, Massachusetts, has acquired the machinery, equipment and manufacturing rights for the *Leonard Rotary Gear Pump*. The purchase was made from Potter-Horn, Inc. of Boston, Massachusetts.

Manufacturing operations are being moved from Osterville to the Company's main plant in Weymouth, and production will continue on a regular basis. Distribution will continue to follow the same pattern as in the past and orders may be placed with local Fire Equipment Distributors.

Steamer Weather Vane

A distinctive outdoor decoration for a fire fighter's home—a steam pumper weather vane—is offered by the Roberts Co., Box 444E, Wayland, Mass. It silhouettes the steamer and crew in action and is made of lightweight cold rolled copper or cast aluminum. Direction arms are cast aluminum and the upright shaft of brass. All are painted dull black and furnished with a special steel roof plate.

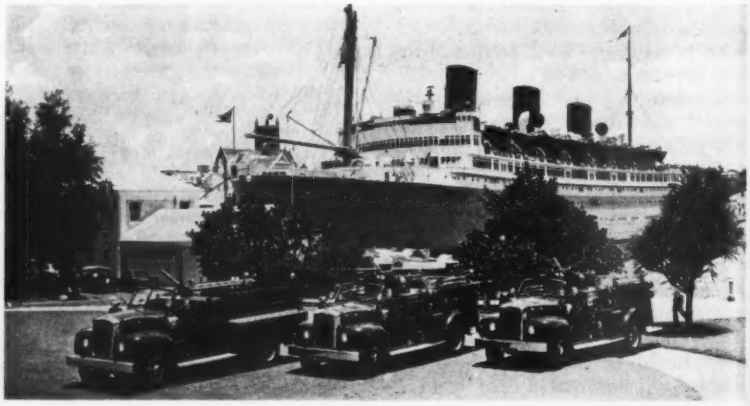
New Neutralize Package

The E. D. Bullard Company, Sausalito, Calif., has announced a new dispensary plastic squeeze bottle package for Neutralize, the phosphate buffer that is claimed to neutralize effects of chemicals in the eyes and on the skin. The solution has received acclaim in industry because it is said to afford first-aid action against chemical irritants.

New Mack Diesel Apparatus Delivered In Bermuda

Mack Trucks, Inc., Plainfield, N. J., recently delivered two 1250 g.p.m. pumpers and a hose wagon to the Hamilton, Bermuda Fire Brigade. Each is driven by a 230 h.p. turbo-charged diesel engine and the units are the first diesel-powered fire apparatus built by the company for the fire service.

The pumpers have front suction connections and 200 gallon booster tanks. The hose wagon, built to hold English-type fire hose, carries 1,200 feet of 3½-inch hose, 6,000 feet of 2½-inch hose and 1,200 feet of 1½-inch hose. All units have airbrake and 24-volt electrical systems supplied by 100 amp. alternators.

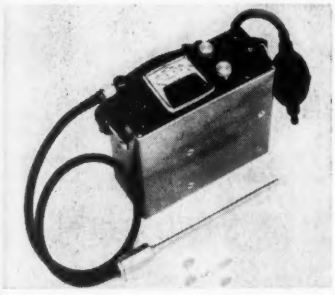


New Transistorized Portable Megaphone

Fanon Electronic Industries, Inc., of Brooklyn, N. Y., recently introduced "Megavox," a new all-transistorized, battery-operated, portable megaphone, weighing a compact 6 pounds but which, it is claimed, can be heard over 600 yards away. The completely self-contained megaphone, requiring no additional power-pack, is unique, according to the manufacturer, inasmuch as a separate microphone jack has been provided so that the unit can be used as a portable public address system, as well as a hand-held portable megaphone.

New Arson Instrument

Johnson-Williams, Inc., Palo Alto, Calif. has announced its Model SS Aromatic Hydrocarbon Indicator for detecting toxic vapors or explosive atmospheres. Said to be 12 times as sensitive as standard combustible gas indicators,



the unit is claimed to be useful for investigating suspected arson cases up to five days following a fire. Powered by a rechargeable nickel-cadmium battery, it is normally calibrated on benzene with conversion factors available in tabular form for many other hydrocarbons.

Bendix Remote Base Station

The Bendix Corporation, Bendix Radio Division, Baltimore 4, Md., announces its Model 172L65C Transistorized VHF Remote Base Station. It is said to be the first transistorized remote base station available. The transmitter provides a minimum of 50 watts output on 150 to 174 megacycles. Options include a weather-proof cabinet for outside installations, "Quiet Line" tone operated squelch or two channel operation.

National One-Man Foam Unit

National Foam System, Inc., West Chester, Pa., has marketed a new unit with a foam capacity of 600 gpm, specially designed for first aid fire fighting in plants handling flammable liquids.

The new Aer-O-Foam Station, operated by one man, consists of a steel cradle, a 55-gallon supply of foam liquid, an Aer-O-Foam Line proportioner and an RP-6A Nozzle connected with 100 feet or 150 feet of 1½-inch hose. It can be installed simply by piping the inlet to a source of water at suitable pressure. To start fire-fighting action, the operator removes the canvas cover, strips out the hose, inserts the pickup tube in the special vent in the top of the tank, and opens the water valve. Foam is said to begin flowing in seconds. A pressure of 125 pounds provides a foam stream up to 50 feet in length.

New Snyder Extinguisher

M. L. Snyder & Son, Jasper and York Streets, Philadelphia 25, Pa., has introduced its "Stempel 503" 2¾-pound dry chemical extinguisher. The new unit is said to have a UL rating of 6 B:C.

Qwik Kut Rescue Kit

Qwik Kut Mfg. Co., 83a Washington St., Brookline, Mass., has introduced an air-operated portable cutting tool for use by fire departments, rescue squads, etc. Said to cut through ⅛-inch steel, aluminum, masonry, etc., quickly and easily, the versatile unit is powered by compressed air and weighs 57 pounds complete with two 44 cu. ft. air cylinders and case.

New Forestry Trucks

The U. S. Corps of Engineers recently took delivery of 32 forestry fire fighting trucks for use at U. S. Navy and Marine Corps facilities in this country and overseas.

Built by Coast Apparatus Inc., Martinez, Calif. the units feature 4-wheel drive, V-8 engines, 500 gpm PTO Waterous pumps, 600 gallon booster tanks and Deynor Fire-Lik cartridge-type wet water mixers.

New Miller-Meteor Plant

The Miller-Meteor Division, Divco-Wayne Corp., for the past three years located in Bellefontaine, Ohio, has returned to its original Meteor plant in Piqua, Ohio. The new facility, representing a million-dollar conversion and expansion program, provides more than 160,000 square feet of manufacturing space on one floor and is claimed to be the most modern in the industry. The new factory is said to more than double normal production capacity.

Appointments and Promotions

James E. DeLong, president, Waukesha Motor Company, Waukesha, Wis., recently announced his retirement. He has served as president for the past 25 years. **Charles E. Nelson, Jr.,** formerly executive vice president has been elected

President by the Board of Directors. Other officers elected are J. G. Swain, vice president, and L. W. Youker, secretary and treasurer. N. H. Willis was appointed vice president of engineering and J. J. Kleinbrook was appointed assistant secretary and assistant treasurer.

Harry E. Butters, advertising manager for fire protection equipment, American LaFrance, a division of Sterling Precision Corp., Elmira, N. Y., retired October 1, after 43 years service with the company.

T. Sloane Palmer, was appointed to succeed Butters. He was formerly vice president of Comstock & Co., a Buffalo, N. Y., advertising agency.

National Electric Supply, 3521 Chestnut Street, Oakland, Calif., has been named distributor for Sperti Faraday electric signalling equipment in the Oakland area.

Boggis-Johnson Electric Co., 1426 National Avenue, Milwaukee, Wis., and **Moe Northern Co.,** 526 West Wisconsin Ave., Appleton, Wis. have been named distributors for Sperti Faraday signalling and fire alarm equipment in their respective areas.

New England Communications, Inc., 572 Washington St., Wellesley, Mass., has been appointed a manufacturer's representative for mobile two-way radio equipment by the Radio Corporation of America.

Raymond Minichiello has been appointed manager, mobile communications product planning for General Electric's Communication Products Department, Lynchburg, Va. In his new position he will have responsibility for product-development guidance on vehicular two-way radios, portable transceivers, pocket units and associated systems devices.

Charles E. Craft has joined Republic Rubber Division, Lee Rubber and Tire Corp., Youngstown, Ohio, as a field representative. He will headquarter in Midland, Texas and service the West Texas and New Mexico area. □□

FALSE ALARMS

Logic

Kinkchaser discovered a hole in his uniform trousers, so he stopped by a local tailor to have it repaired.

While waiting he asked: "What's the best way to make a pair of pants last?"

The quizzical tailor responded: "Make the coat and vest first."

A fire buff, noted for his large appetite, had wrangled an invitation to partake of a meal with the engine company. After demolishing most of the meat on a platter, he speared the last piece with his fork and asked, "Is this pig?"

A disgusted voice asked, "To which end of the fork do you refer?"

Seeing Is Believing

The old timer returned home early one evening showing signs of having enjoyed himself at the neighborhood tavern. His wife read him the riot act and then announced he had better straighten up as they were going to the hospital to see the twins a niece had recently borne.

The old souse made a determined effort and appeared at the maternity ward in fairly good condition. Soon the nurse brought the twins in a single basket. Making one last gesture, he steadied himself and announced, "What a beautiful baby!"

Dieting is the penalty for exceeding the feed limit.

Kinkchaser looked somewhat the worse for wear one morning and his captain asked him what had happened.

"We had a surprise party last night," was the forlorn answer. Not satisfied his captain said, "How could you get such scratches and bruises on your face at a surprise party?"

Kinkchaser, looking very glum, answered, "Well it was sort of a surprise party. My wife came home unexpectedly!"

Time Saver

The golf club locker room attendant answered the telephone and a female voice inquired, "Is my husband there?"

The attendant promptly answered, "No, ma'am."

"How can you say he's not there before I *even* tell you who I am?" inquired the indignant lady.

"Makes no difference, lady," answered the well-trained attendant, "there never is anyone's husband here!"

Judge: "Your husband complains that he leads a dog's life."

Wife: "Well, it is similar, your Honor. He comes in the house with muddy feet, tracks across my clean floor, barks at nothing, growls at his food, and makes himself comfortable on my best furniture."

Keep smiling—it makes everyone wonder what you've been up to.

"And now, a special retirement gift from our chief symbolizing ol' Ed's lengthy career as an Engineer . . . the Boot Locker he spent 90 per cent of his time on!"

Trapped

The chief was laying plans to attend a meeting when his wife interrupted: "Henry, I think I'll go with you to New York for the conference. I want to buy some new shoes, a hat, a dress or two, and—"

"Now, dear," hastily added the nervous chief, "I'll be extra busy this trip; besides you can get all of those things right here."

"Thanks," answered his beaming wife, "that's what I was hoping you'd say."

One shift of the truck company complained vociferously to the cook that the steak he served was as tough as shoe leather. Shaken by the outburst, the luckless cook immediately went to the shop where he had bought the meat and told the proprietor "That steak you sold me today was so tough we could have soled our shoes with it."

"Well, why didn't you?," was the butcher's antagonistic reply. Quick as a flash the cook replied, "The nails wouldn't go through!"

The attorney was cross-examining the defendant during an arson trial. Try as he might, he could not trip him up. Finally he said to the crafty man, "You seem to have plenty of intelligence for a man in your position."

Nonplussed, the man retorted, "If I was not under oath, I'd return the compliment."

The unsuccessful politician sat in the engine company lounge room berating the decline of his fortune. "The trouble I ran into was my youth," he stated.

"Your youth?" exclaimed an astonished fire fighter, "but you're over 50 and your youth is spent."

"That's just the trouble," answered the chagrined man, "the people found out how I spent it."

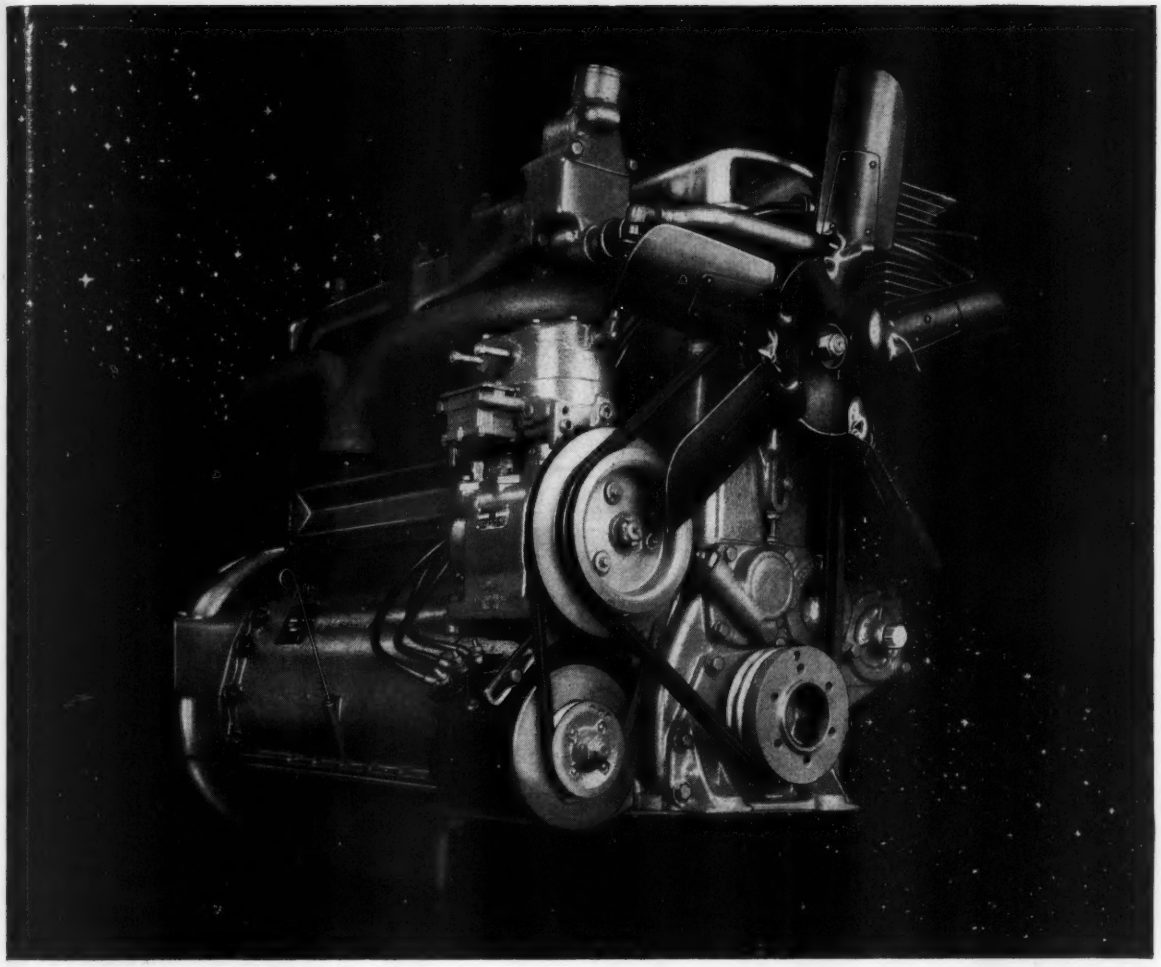
Take My Word for It

A probie, out with his company on a mutual aid call, had radioed to the dispatcher to call his wife and tell her he'd be late. Upon returning to quarters he called the dispatcher to thank him and said, "What did my wife say when you told her I'd be late?"

The blunt dispatcher calmly answered, "All she said was, 'Can I depend on that?' "

Work Inducement

A "Help-Wanted-Female" ad in a local paper contained the following: "We offer excellent fringe benefits—two weeks vacation with pay, paid-up insurance, a pension plan and two unmarried vice presidents."



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Hall-Scott engines in full-scale production at Hercules Motors' Canton plant

There's a pride of ownership associated with Hall-Scott engines that no other power source can inspire. Fire chiefs operating Hall-Scott equipped vehicles know the dependable service and unequalled performance that come from owning the finest . . . and many more will know it soon. For Hercules Motors Corporation has taken over the Hall-Scott engine line: is making these precision-built power plants available to more users across the nation.

Hercules is now producing the famous Hall-Scott Fire Chief (240 h.p.) and Super Fire Chief (324 h.p.) models in quantity. You can own a Hall-Scott engine in the next piece of equipment you order: all major apparatus manufacturers will supply this quality power-plant to your specifications. And service is at your doorstep through Hercules' strategically located distributor network. Write today for descriptive bulletins on Hall-Scott engines for fire service.

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When you're called to "hot" fires—flammable liquids, lumber yards, brush fires, any fire with large areas of complete involvement—you're fighting the heat first! Protected from radiant heat with "Scotch•Shield" Aluminized Fabric garments you can move in close to fight the fire—and you can stay in to control and kill it fast. You have unequalled protection against severe exposures because protective garments—hoods, coats, trousers, gloves or complete entry suits—made of "Scotch•Shield" Aluminized Fabric reflect 90% of radiant heat. This revolutionary fabric is flexible, lightweight, gives protection and freedom of movement never before available to firefighters. Learn more about this fabric used by hundreds of departments—see the opposite page.

SCOTCH·SHIELD
BRAND
ALUMINIZED FABRIC

the round table

discussion of current fire department and fire management problems

School Fire Prevention Practices

THIS IS THE FOURTH installment of the Round Table on fire prevention practices in the schools.

Readers are invited to participate in this discussion which will be continued in the January issue. Address replies to Round Table Editor, FIRE ENGINEERING, 466 Lexington Avenue, New York 17, N. Y.

The Discussion

Wayne Ulm, Chief, Des Moines, Iowa: We regularly schedule public and private school fire prevention inspections. We have legal authority to inspect these schools and order violations corrected.

We do not require automatic sprinklers or fire detectors in school buildings, nor do we require that school fire alarm systems be connected directly to fire alarm headquarters.

We permit smoking in teachers' lounge rooms and rest rooms.

We do not have a scheduled program for instructing teachers and custodial help. However, we do instruct teachers at various gatherings, work with custodial supervisory staff personnel and check on each custodian's knowledge of fire extinguishers, fire prevention and principles of conducting school inspection.

A "Fire Safety and Civil Defense Bulletin" is provided for and used by all school personnel. This bulletin gives information on: General fire safety precautions; responsibilities of principals, teachers, students and custodians; rules to follow in case of fire; civil defense drills and tornado safety information.

John M. Dacey, Fire Marshal, Syracuse, N. Y.: We regularly schedule public and private school fire prevention inspections and have legal authority to inspect schools and order violations corrected.

In areas considered hazardous or combustible storage, we require automatic sprinklers or automatic fire detectors in school buildings.

We do not require that school fire alarm systems be connected directly to fire alarm headquarters.

If it meets with the approval of the fire department and school authorities, we permit smoking in teachers' lounge rooms.

We do not have a program for instructing teachers and custodians in the rudiments of fire prevention.

Hobart Kruse, Chief, Champaign, Ill.: In our department, we regularly schedule public and private school fire prevention inspections. We have legal authority to inspect these schools and order violations corrected.

A new school safety code for the state is about ready for use. It will require sprinklers in some buildings and partial use of them in others. Automatic fire detectors are only required in some areas.

We do not require that school fire alarm systems be connected directly to fire alarm headquarters.

Smoking in teachers' lounge and rest rooms is permitted.

We do not have a program for instructing teachers and school janitorial help in the rudiments of fire prevention; this is handled by the school board, with occasional recommendations from the fire department.

Lester R. Schick, Chief, Davenport, Iowa: Schools are inspected on the basis of four inspections per year. We have authority under our local fire prevention ordinance to inspect and order corrections as needed. A court case is pending in Iowa (not Davenport) to test the city's right to inspect in all fields; order corrections; force compliance with building, electrical, plumbing, fire prevention and

THIS MONTH'S QUESTIONS

Do you regularly schedule public and private school fire prevention inspections? If so, do you have legal authority to inspect these schools and order violations corrected or are the inspections made on an "invitation and cooperation" basis?

Do you require automatic sprinklers or automatic fire detectors in school buildings?

Do you require that school fire alarm systems be connected directly to fire alarm headquarters?

Do you permit smoking in teachers' lounge rooms and similar restrooms?

Do you have a program for instructing teachers and school janitorial help in the rudiments of fire prevention? If so, briefly outline the subject matter.

How much—what type of Reflective clothing does a department need?

Many airport departments have equipped their entire force with "Scotch·Shield" Fabric garments. However, two suits are providing basic "starter" protection for other departments. Approach and proximity jobs can be performed with reflective hoods, bunker coats and pants, and gloves—rescue jobs with complete "entry" suits.

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It's a fabric made of pure aluminum vapor-coated on lightweight rayon, asbestos, or glass cloth. Its bright aluminum finish reflects 90% of radiant heat. "Scotch·Shield" Fabric is extremely flexible and resists stress or tearing, won't peel or crack. Durability far exceeds other fabrics given equal heat exposure. It produces reflective-protective garments lighter than conventional bunker clothing—it eliminates the need for bulky insulation type gear. Return the coupon for literature describing "Scotch·Shield" Fabric and its uses in firefighting.

Try this heat test . . . within seconds the conventional bunker coat smoldered . . . "Scotch·Shield" Fabric garment protected for the duration of the 100 gallon spill fire!

Where can you buy

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Garments made from "Scotch·Shield" Fabric are available through your regular fire equipment suppliers. Or you can secure the name of fabricators by checking the box in the coupon below.

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☐ Please send names of firms manufacturing "Scotch·Shield" Fabric garments.

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Title_____

Fire Dept. or Firm_____

Address_____

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THE FIREMAN'S FIRST LINE OF DEFENSE

The CAIRNS "LIFE-GUARD" LINE also includes other leather helmets, in other styles and weights—as well as helmets in aluminum and FLINT-FLEX plastic in regulation and drop-brim styles.

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other codes. This is due to Iowa State law which establishes public school boards as a separate governmental agency.

Sprinklers are required in other than fire-resistive buildings and we have a program to install fire detectors in all schools.

We require school fire alarm systems be connected directly to fire alarm headquarters in all public schools. Private schools, however, do not come under this ruling.

We permit smoking in teachers' lounge rooms.

We give an annual course to custodial staffs. The material includes: Chemistry of fire—film, demonstration; fire prevention—hazards; operation and explanation of types of extinguishers in school system; fire extinguishment—practical application in fires.

George C. Graham, Chief, Bristol, Conn.: Public and private school inspections are scheduled every month. We have legal authority to do so and order violations corrected.

Automatic sprinklers or automatic fire detectors in school buildings are required where needed.

We require school fire alarm systems be connected directly to fire alarm headquarters, in so far as possible.

We have no control over teachers smoking in the schools.

During Fire Prevention Week, teachers and custodial help are tought the different types of fires and the proper extinguishers to treat each. They are required to extinguish fires of various types, using proper extinguishing methods.

George C. Hanna, Chief, Danbury, Conn.: We regularly schedule public and private school fire prevention inspections. Legal authority, under the Fire Safety Code of Connecticut and local ordinances, is given us to inspect these schools and order violations corrected.

Automatic detectors are required in school buildings; sprinklers are not.

We encourage the connecting of school fire alarm systems directly to fire alarm headquarters, and some are, but this is not a required practice.

We permit smoking in teachers' lounge rooms.

We do not have a program for instructing teachers and school janitorial help in the rudiments of fire prevention.

Thomas Collins, Chief, New Haven, Conn.: Public and private school fire prevention inspections are regularly scheduled. We have legal authority to inspect these schools and order violations corrected.

Combustible schools over two stories are fully sprinklered. Automatic fire detectors are installed in all schools.

We require that public school fire alarm systems be connected directly to fire alarm headquarters.

We do not permit smoking in teachers' rest rooms.

Our fire prevention program is as follows: Talks on fire prevention are given; pictures on the prevention of fire are shown; essay and poster contests are con-

ducted on fire prevention; teachers and janitorial help are instructed monthly on the evacuation plans for each school. Fire drills are held twice or more monthly. On these drills, different exits are blocked off so that the students will familiarize themselves with all means of egress in the school building. Instructions on the use of the alarm system are given.

Edgar A. Sherry, Chief, Richmond, Va.: We regularly schedule public and private school fire prevention inspections. We have legal authority to inspect and order corrections of any violations of the fire prevention code.

Automatic fire detectors and automatic sprinklers are not required.

Although it is not required, most of our schools have fire alarm boxes connected directly to fire alarm headquarters.

We permit smoking in teachers' lounge rooms.

We do not have a program for instructing teachers and custodial help in the rudiments of fire prevention.

Dan F. Vogel, Chief, Cincinnati, Ohio: We regularly schedule public and private school fire prevention inspections. We have legal authority by city ordinance and state law to inspect these schools and order violations corrected.

Up to the present time, we have not required automatic sprinklers or automatic fire detectors in school buildings. This matter, however, is now under consideration.

School fire alarm systems are not required to be connected directly to fire alarm headquarters but a program of fire box installation is now completed whereby the average distance from any school to a city fire alarm box is less than 250 feet.

We permit smoking in teachers' rest rooms; they are instructed to be careful and use only metal ash trays.

Our program follows: High ranking members of the fire prevention bureau meet with top school officials and work out the various problems and regulations which are transmitted through school channels to all teaching personnel. These bulletins and regulations are first approved by the chief of fire prevention. The fire chief frequently accompanies the assistant fire chief in charge of fire safety on the visits to school authorities. Supervising inspectors of the fire prevention bureau attend safety meetings of school maintenance staffs, i.e., custodians and janitors. Visual aids, talks, inspection methods, school fire and life hazards and the importance of keeping schools fire safe, are all part of the teaching and discussion material. Ordinances, laws and regulations are also explained. In addition to the regular fire inspections and fire drills, all school personnel are briefed about the seasonal fire hazards.

J. L. Evans, Chief, Savannah, Ga.: We make regular inspections (at three-month intervals) in the schools, for which we have legal authority.

In our department, we require automatic sprinklers or automatic fire detectors in school buildings. We also require

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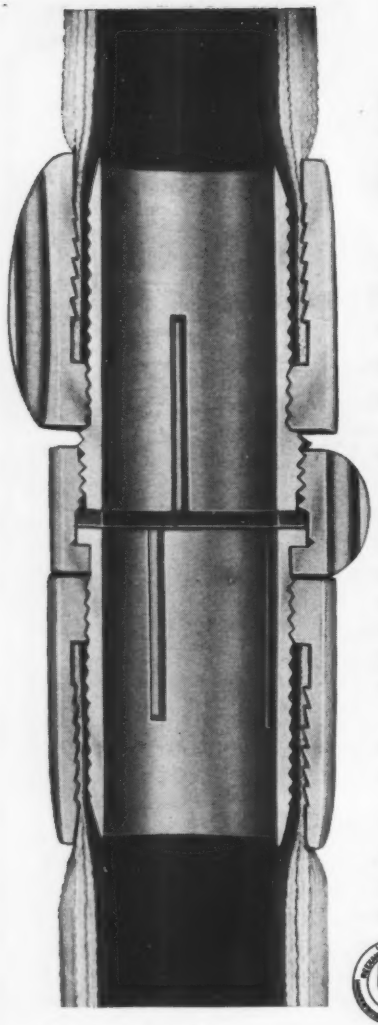

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The simplified streamlined design of this precision coupling, which is basically the same as that of your booster hose, guarantees full flow, full pressure and ease of handling under all conditions. Fast emergency hose repairs can also be made in the field if you specify Bar-Way for original application.

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that school fire alarm systems be connected directly to fire alarm headquarters.

Smoking is permitted only in the teachers' lounges.

We instruct the janitors and their helpers on how to store their mops and brooms, so they do not create a fire hazard in the building. We regularly stage fire drills in the schools and require everyone to leave the building. We have junior fire marshals and inspectors in all the schools and it is their duty to see that everyone is out of the building before they leave.

Edward J. Grady, Chief, Manchester, N. H.: We have legal authority to inspect schools. There are no penalties attached to violations. You just request, beg—plead—and hope for results.

We require automatic fire detectors in school buildings.

In our department, we require that school fire alarm systems be connected directly to fire alarm headquarters.

Smoking is permitted in teachers' lounge and rest rooms.

We do not have a program for instructing teachers and custodians in the rudiments of fire prevention.

F. F. Donovan, Chief, Plainfield, N. J.: We regularly schedule inspections of private and public schools by our fire prevention bureau. We believe that the provisions of our fire prevention code give us the legal right to make such inspections and we issue written orders to correct any violations discovered during the inspections.

We require each public and private school to be completely covered by an approved automatic fire detection system; we have 22 school buildings in the city and all are so protected.

We require all school alarm systems to be directly connected to fire headquarters, both from manual stations and the automatic system. Each school has a master box located on the street front of the property. We also require trouble supervision of the automatic system by telephone-leased lines to fire headquarters.

We permit smoking in the teachers' lounge room only. Smoking is not permitted in any other portion of the schools.

Gordon Barker, Chief, Medford, Ore.: We regularly schedule public and private school fire prevention inspections, which would be not less than twice during the school year. Legal authority to inspect these schools is provided by our fire code ordinance.

We do not require automatic sprinklers or fire detectors in school buildings, but do require sprinklers in storerooms located under stairs.

We do not require that fire alarm systems be connected directly to fire alarm headquarters.

Smoking is permitted in teachers' lounge rooms.

All custodial workers receive training each year on the use of the various types of extinguishers in the schools. Fire prevention classes are conducted for both custodial workers and teachers. □□

Among the Buffs

By Paul C. Ditzel

LOOKS AS THOUGH the Box 54 Club of Teaneck, N. J., put its new canteen in service just in time. The rig got its baptism within hours after tapping in service. The baptism turned out to be more of a deluge.

The Box 54 buffs turned out at 9:11 p.m., Wednesday, October 27, the night after the van was dedicated. The alarm was from Cedar Lane and Pomander Walk where a truck, stored lumber, motorized power tools, and a supply of fertilizer was in the air when first-arriving units rolled in. The single-story storage and garage building was destroyed, but Teaneck Township firemen can look back on fresh doughnuts and coffee served by their Box 54 compatriots.

Edwin D. Charney, 90 Tracey Place, Apt. N-1, Englewood, N. J., a Box 54ite, also sent along word that the rig chased over to Ridgewood two days later when a $250,000 blaze burned out the upper section of the Ridgewood High School. The Box 54 canteen hurried to the scene and dispensed refreshments to blazebeaters from Ridgewood, Glen Rock, Midland Park, Ho-Ho-Kus (no hocus-pocus from them) and Fair Lawn.

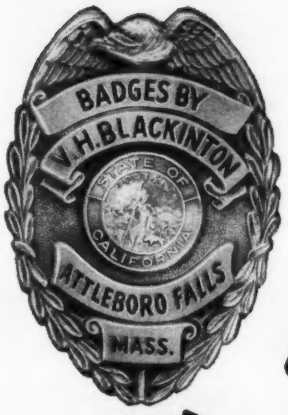
Prior to the club's flurry of action, Teaneck Mayor Matthew Feldman congratulated the buffs on their unique record and reputation for public service. The mayor, who presented the van's keys to Box 54 President Frank Donnelly, was among 300 who attended the dedication of the rig.

The club, it was pointed out during ceremonies, was formed in 1953 and has made 203 service runs. In addition to operating the canteen at fires and disasters in the area, club members are trained as auxiliary firemen and respond to all Teaneck two-baggers.

Guests at the dedication included retired Chief Francis Murray of the Teaneck Fire Department; Deputy Assistant Chief Charles Stressler of the New York Fire Department; Carl J. Koenig, coordinator of the County Civil Defense and Disaster Control; William Davis, director of the Teaneck C. D.-D. C. unit; and Amos Smith, president of the New Jersey and New York Volunteer Firemen's Association. The new canteen was blessed by the Rev. Noel Ahrens, Cresskill Fire Department Chaplain and son of Teaneck Assistant Postmaster George Ahrens, a club member.

During the program, a room with seven radios tuned to various fire frequencies throughout the area was manned by a Box 54ite whose cocked ear was ready to send off a visiting chief should a blaze crack in from his hometown. The one alarm received went into a deuce at First Avenue and 53rd Street, Brooklyn, just as the program was ending. Chief Stressler was off and rolling.

The box 54 group was formed from a coterie of fans who served coffee from jugs in their cars some 10 years ago. The



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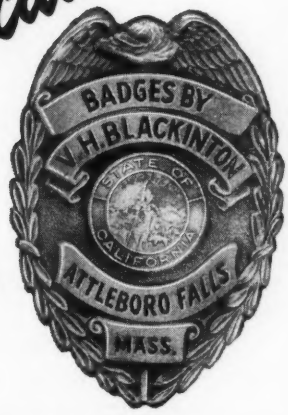

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- Fog
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clubbers include merchants, postal employes, an insurance broker, newspapermen, a news cameraman, and those with a common avocation.

The 14-foot mobile canteen has double the serving capacity of the old rig. The van was purchased by Teaneck Township which also supplies most of the wherewithal for its operation. The truck seats four and opens from one side and rear for serving. A canopy over the side protects firemen and the canteen's crew during bad weather.

The stand-up interior of the red vehicle permits continuous serving at major fires. Weary firemen are supplied from two 2½-gallon urns with bottle-gas burners. The truck is equipped with siren, flashing red lights, ventilating fan, and self-contained AC power supply.

Cabinets with sliding doors hold a supply of more than 4,000 paper cups and coffee, canned milk, sugar, bouillon, lemonade, and similar refreshments.

The Box 54 buffs estimate they have served more than 6000 gallons of coffee and untold amounts of buns, doughnuts, sandwiches, and other foods at some of the area's biggest fires during the past decade. The canteen has also responded to all Civil Defense alerts and made one memorable run to Sterlington, N. Y., to aid rescue parties at a train wreck.

North and west of Teaneck, out in Villa Park, Ill., Artist-Buff Frank J. Tewfell of 27 South Oakland Avenue sends one of the most masterful fire paintings I've yet seen. Frank says he likes to paint various rigs, particularly those in standard usage from the late 20's through the early 40's. The watercolor that Frank sent shows a representative Seagrave pumper which was popular in and around Chicago.

To further his knowledge, Frank would appreciate receiving good photos and other illustrative material. He'd also like to hear from fans in the Chicago area who share his interest.

Battalion Sergeant Major F. A. McConnell of the Fort Henry Guard, Old Fort Henry, Box 213, Kingston, Ontario, Canada, says he is trying to sleuth information on an antique fire pumper in their possession. The rig is known as a "William Perry, Patent No. 5, Montreal." It was in service during the mid-1860's in parts of Ontario. Any buffs with knowledge of this apparatus' ancestry should write to BSM McConnell.

Until the next Dixie Cup of coffee at the next two-alarmer in Teaneck, please continue to send along your buff club ancedotes and individual buff reminiscences to me at 4234 Don Diablo Drive, Los Angeles 8, Calif. □□

El Paso Plans Drill Tower

El Paso, Tex., City Council has approved preliminary plans for a six-story fire department drill tower and classroom. The facility, estimated to cost approximately $45,000, will be located on the east side of Ascarate Lake on land given the city by the United States government under agreement with the county.

E. W. Fair

REPUBLIC

FIRE HOSE

Contains 16 pages of information on Fire Hose in general and Republic Fire Hose in particular. General information includes: Care and Use of Hose; Do's and Don'ts; Loose Edge Tube Construction; Provar Process and Wax Treatment; jackets, yarns, linings, grades. The 30 different grades of Republic Fire Hose are included under these categories: Chemical, Factory Mutual, Fire Engine Suction, Industrial, Municipal, Special Application and Underwriters'. Also includes four pages on Couplings.

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– CUTS THEM CLEAN!

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• Rugged, heavy-duty construction.

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HARRISBURG FIRE

Continued from page 1129

fashion from the first floor. Within minutes flames were surging up in the center of the store.

Chief Houseal had located second-alarm companies on the Blackberry Street side, and third-alarm companies were sent to the roofs to try to cut off the rising flames inside the store. At 5:23 p.m. he radioed requests to Dauphin and Cumberland Counties for mutual aid. In all 14 volunteer fire companies responded bringing together a fire force of over 300 men.

Ventilation almost impossible

Early efforts were made to bring hose lines into play through holes chopped at various sections of the roofs, but firemen were driven back by heat and choking smoke and fumes. Ventilation was all but impossible, and smoke masks proved of little use. In fact, some 2½-inch hose, nozzles, portable lights and hand equipment were lost when front sections of the roof collapsed.

By 6 p.m. the battle was well under way. Ladder pipes and deluge sets were covering two sides of the burning structures. Twenty lines were concentrated on the area, but all lacked the necessary punch to reach the heart of the blaze deep inside the Youth Centre. Flames had spread under the floor into the Triangle Shoe Store. Firemen were able to hold flames from the Feller Building and Capitol Shop, but could not at this time halt their spread under the shoe store.

Chief Houseal later said all-purpose masks didn't render adequate protection. Most of the men overcome also experienced eye trouble from the fumes. Three firemen were hospitalized, one for nearly a week. About 40 others, as nearly as could be determined, were treated at the scene with oxygen and eye wash. None of these suffered permanent injuries, although many were lost to duty as they were unable to return to the fire lines.

Shortly after 9:00 p.m., the impasse was broken by what proved a boon to harrassed fire fighters. Flames finally burst through the Youth Centre roof at the third-story level, and through the rear roof at the second-story level. With the flareup into the open, hose lines could be deployed effectively for the first time.

Firemen were now able to attack the blaze from rooftops and numerous 2½-inch lines were brought into play.

Ten additional master streams were set up using deck guns, portable and stationary ladder pipes, and deluge sets. Shortly after 10 p.m., a total of 27 master streams could be counted pouring water into the wreckage of the two burned-out buildings, or protecting the exposures, especially the Feller Building, where water and smoke damages were taking a severe toll.

Assisting Units

Progress—Pumper and truck
Paxtang—Pumper
Steelton—Two pumpers
Lower Allen Township—Pumper and truck
Lemoyne—Pumper, rescue, manpower
New Cumberland—Pumper and manpower
West Fairview—Pumper and fire police
Carlisle—Squad with demand masks
Oberlin—Pumper
Enhant—Pumper
Harrisburg Municipal Gas Co.—Demand masks
Harrisburg Police
CD Auxiliary Police
Red Cross
Salvation Army
Lemoyne Ladies Auxiliary

22,000 feet of hose used

As near as could be determined by fire officials at the scene, 22,000 feet of hose was in use. The following Monday, Harrisburg water pipe line superintendent Hober Corty reported to Chief Houseal that more than 1,500,000 gallons of water had been metered through water mains to the fire area during the battle.

At 4:17 a.m., on May 28, the blaze was declared under control although several city pumpers and crews remained through most of Saturday overhauling hot spots.

Early the following Monday morning, city fire officials were joined by Gerald Lafferty and James J. Regan, Pennsylvania State Fire Marshal's Office; Special Agent Robert W. Knight, National Board of Fire Underwriters; and representatives of various insurance groups in launching an investigation into the cause and extent of the blaze.

After weeks of intensive study by the official team, including exhaustive verifying tests in the state police laboratory, the cause of the fire was officially revealed. The blaze had been touched off over a period claimed to be 25 or 30 years, by a 10-inch steam supply pipe from the city steam heat mains leading into the front of the Youth Centre basement from the underground service along Market Street.

The iron pipe, containing high-pressure steam, was capable of generating temperatures of from 500 to 900° F., and this pipe was in close proximity to pine and oak rafters. These rafters crossed the steam pipe at right angles and had been slowly charring for all these years until ignition finally occurred. Fire inspectors had missed the danger spot repeatedly over the years because it was hidden from view by a shield of plywood. □□

Obituaries

Lester Stevenson

Lester Stevenson, 63, former president of the Seagrave Corporation, died November 11 in St. Anthony Hospital, Columbus, Ohio. He had been associated with Seagrave since June 1919, becoming president in 1954. He retired because of illness in 1959 and was appointed consultant to the firm and a member of the board of directors.

He started in the business as a mechanic and delivery engineer and transferred to the sales department in 1924. He was named manager in 1926 and elected a vice president and director in 1941. He is survived by his widow, a son and daughter. *—Chief Larry Donovan*

Former Chief R. R. Boshard

Reed R. Boshard, 77, fire chief of Provo, Utah, from 1920 through 1931, died October 26 at a hospital there, following a long illness. He joined the department in 1911. *—E. W. Fair*

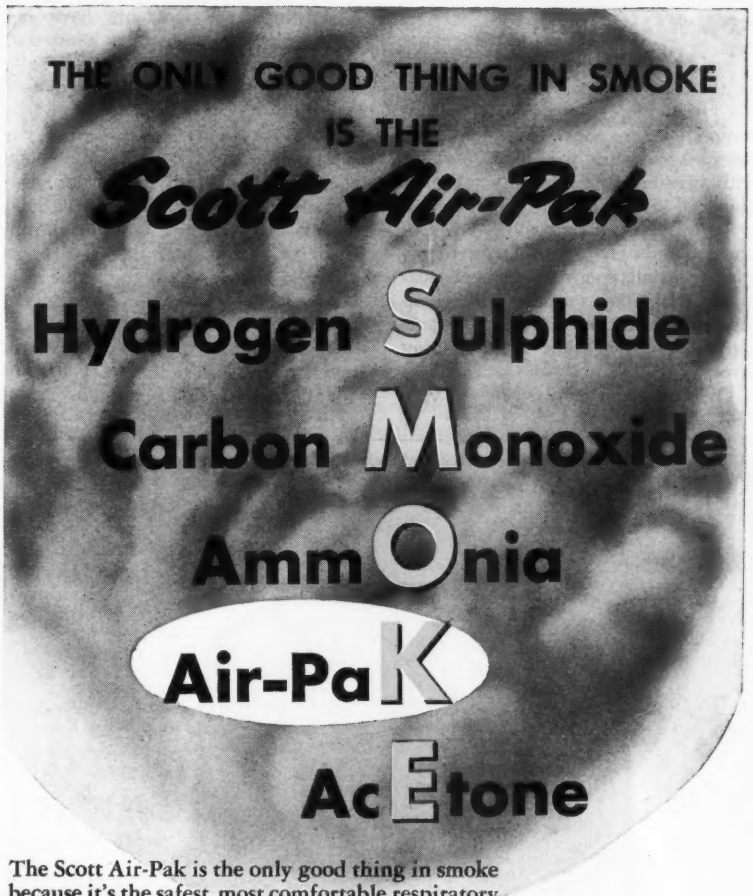
S. Wentworth Horton

Senator S. Wentworth Horton, former chairman, Joint Legislative Committee on Fire Laws, New York State, died October 2 after a long illness. Senator Horton was a sponsor of the legislation which created the original Temporary State Commission on Fire Laws to study laws pertaining to fire protection and prevention in New York State. He became chairman of the commission and of its successor, the Joint Committee, and served until his retirement from the state legislature in 1956.

Chief P. A. Giacomazzi

Former fire chief P. A. Giacomazzi, a charter member of the Santa Paula, Calif. Fire Department, died August 7, 1960 after 54 years of service.

Chief Giacomazzi joined the fire department at its inception in 1904 and during his long career held every office in the organization. He was elected chief in 1945 and resigned the position in 1950 becoming an honorary member.



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FLOW MEASUREMENT

Continued from page 1131

as there are people participating in the particular discussion. Pressure components are considerably easier to measure and more people are familiar with pressure gages because of their universal usage in all types of fluid systems. Also, pressure gages are economical and easy to install. Due to this ease of installation, a convenient location is sometimes selected rather than the proper instrument standard prescribed position, thus compounding errors.

Pressure gages on occasion are very misleading and accidents have occurred resulting in death or injury and damage to apparatus because the pressure indicator did not adequately picture the correct hydraulic situation. On several occasions, apparatus has sustained pump and engine damage because the operator could not visually observe the fire stream on a long hose layout, or a line entering the interior of a ship, and therefore operated the engine at a high output rate, not realizing that the nozzles were shut off.

Governor controls and relief valves regulate pressure only—NOT FLOW—and therefore only provide partial short-period protection to the equipment. Under a "no flow" condition, the mechanical energy developed by the engine is transmitted to the pump where it is converted to unwanted heat which must be disposed of immediately. The accumulation of this unwanted heat rapidly increases temperatures which may cause distortion of the pump casing, bent shafting, damaged bearings, worn seal rings and packing. The only positive method of preventing damage is for the operator to know the quantity of fluid flowing as measured by direct readout flow gages installed at the pump discharge gates and by maintaining proper engine output to satisfy the operational requirements.

Many people are taught that pressure is the contributing force that causes the nozzles to break loose from their secured position and thrash violently in the surrounding area. This is not likely. It is the rate of energy release at the nozzle throat that produces an unstable reactive force which raises havoc. This reactive force is a function of the quantities of fluid flowing and the jet velocity. To consider the pressure component only (partial pressure), provides a sense of false security which eventually may lead to trouble and ineffective fire extinguishment.

Important factors

Referring to the necessity for measuring the flow of fluid it is often remarked: What difference does a few gallons of water per minute make when fighting a large fire? The direct answer is: None. It is the transition of the water from a confined state to a dispersed state that is important. To accomplish this objective, the jet horsepower, the desired flow distribution pattern, the reactive forces and the flow rate for efficient application must be established and adhered to. In addition, if the above information was unnecessary, we shouldn't require modern fire apparatus and could revert to our old standards of operation and the "practical guess."

Furthermore, it is necessary to upgrade our technical knowledge and to improve our training procedure to conform with modern apparatus, structures and ways of living. The engine horsepower and torque of the apparatus has generally doubled in the past years and the pump rating in both output and energy gradient have increased proportionally. Operational requirements now demand intelligent personnel capable of understanding and mastering simple hydraulic situations and problems which occur using high-energy machinery. To effec-

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November Cover Credit

The cover photo on the November 1960 issue of FIRE ENGINEERING and the photographs which illustrated the accompanying New Haven factory fire article were taken by Lieutenant Alfred Bysiewicz, New Haven Fire Department photographer.

tively operate emergency equipment it is mandatory that the operator be able to accurately and quickly measure the essential elements of a hydraulic system and rationally express these direct readout gages in numerical dimensions of tolerance, performance and human endurance. To accomplish this objective the engineering departments of the fire service must be equipped with simplified modern measuring devices, schooled in their usage, and then the applied technology be put into daily practice.

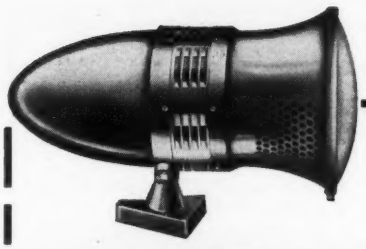
To rapidly predict the characteristics of fire streams, a nomograph showing the predominant hydraulic relations is illustrated here. By establishing any two of the eight variable functions, the remaining six values can be ascertained. The operation of such a graph is extremely simple and is accomplished by establishing any two known numerical values and projecting a straight line through these points, intersecting all of the scales. Direct readout at the intersection shows the correct numerical characteristics. □□

Residence Requirement Upheld In California

The right of a city to require its civil service employees to reside within its limits was upheld in August by the California State District Court of Appeals. The decision was returned in denying the appeal of six firemen and two policemen from a Superior Court judgment which declined intervention in an Emeryville, Calif., case.

The eight men had been fired after the Emeryville City Council required they move within the city limits by January 1, 1959. All other city civil service employees complied with the order, the appelate court noted.

The eight argued in their appeal that cities empowered to set up civil service systems are not automatically given the authority to require employees to maintain residence within their boundaries. The court noted that in the case of firemen and law enforcement officers, their availability for emergency summons was an important factor. *Roi B. Woolley*



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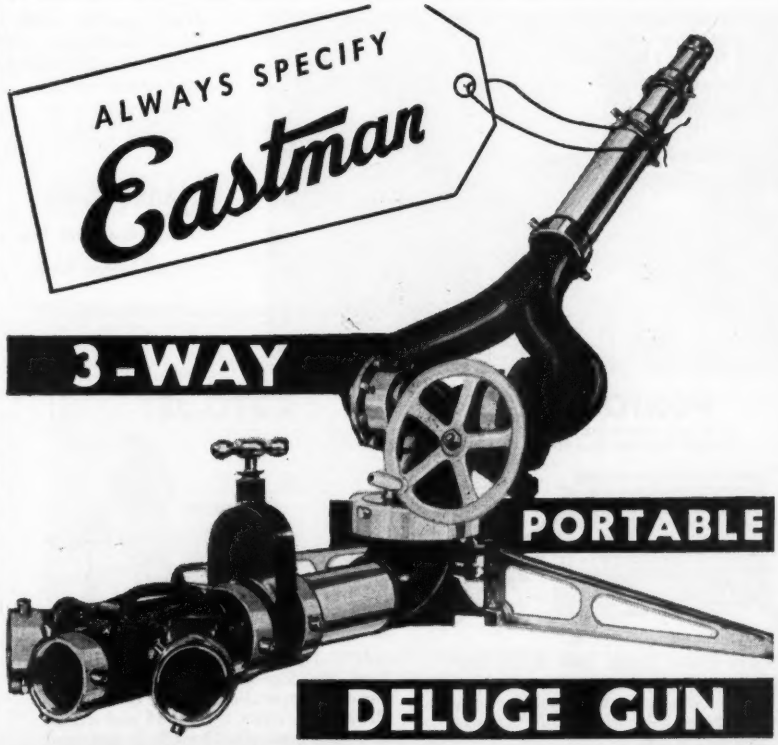

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Questions and Answers

wherein are answered questions relating to current problems in the fire protection

Piston Pumps Defended

The Questions and Answers column of May 1960 contained an answer to a query on the use of piston pumps (volume) in the fire service. Following its publication, Mr. R. S. Howe, president of the Howe Fire Apparatus Co., disputed our answer and asked that he be permitted to voice the other side of the question. The following is his statement:

Although the piston pump is heavy and bulky, present-day trucks are entirely adequate to carry them. The usable space which they occupy is scarcely more than a typical two-stage centrifugal pump. In regard to weight distribution problems, these can easily be handled by merely extending an L from the booster tank on the side opposite the piston pump to correctly distribute the weight.

Although piston pumps have many movable parts, the modern pump operates at only 180 rpm maximum, as compared to centrifugal pump speeds of 3,000 to 5,000 rpm.

The sealing between pistons and cylinders is done with a flexible leather seal, which gives a tight seal with practically no slip. The pump will handle sand and gravel under normal pumping conditions, without ill effect because the leather seals in the pistons, and rubber seals in the valves will deform temporarily as required, rather than scratch cylinder walls, etc. Due to the clearance through the center of the pistons and the check valves, foreign objects of considerable size can be forced through the pump without ill effects.

The operating speed of the pump has not changed with engine speed changes. It has always required a speed reduction to relate engine speed to pump speed, just as most centrifugal pumps require a set of gears to provide a proper impeller shaft speed. The use of high-speed engines has no effect on the efficiency of the piston pump. In regard to the performance of the piston pump as compared with centrifugal pumps, there are occasions when the piston pump will out-perform the centrifugal pump. The volume piston pump can draft water at extreme lifts up to approximately 29 feet, whereas the centrifugal pump cannot draft water over 22 to 25 feet. The piston pump is a very easy pump to operate, requiring no priming, as it is a self-priming pump, and only requires two positions, one for road operations and one for pumping operation. Water is immediately available to piston pumps, whereas the centrifugal pump has to first be primed before operation.

We might add that with the piston pump pumping with a lift of 29 feet, capacity operation can be performed, whereas with a centrifugal pump drafting at 22 feet to 25 feet, only a small volume can be produced at this lift.

Correction

The answer to the question concerning "Finding Nozzle Diameter" on page 429, May 1960, FIRE ENGINEERING, inadvertently omitted the square sign in the last line of the problem. The correct statement should read: $D^2=1.256$; $D=1.12$, or 1⅛ inch nozzle.

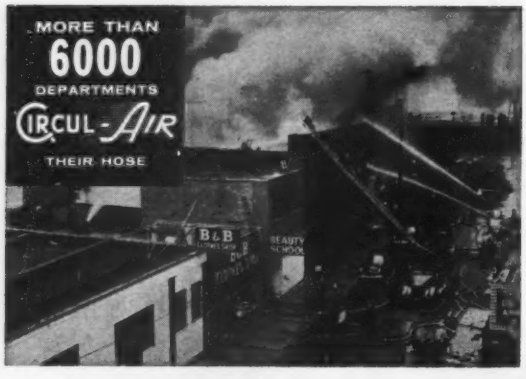
Watch That "Cycle" Rating

To The Editor:

We recently acquired a portable electric generator. The information plate stated it is rated at 1,500 watts, 115 V.A.C., 800 cycle. Can we employ this unit to run small motors, etc.?

D. H.

Answer: The "800 cycle" is a warning sign not to employ this unit for motors other than those designed for the same



Don't gamble with the life and serviceability of your fire hose. Good hose will provide years of trouble-free service ONLY if it is* washed *thoroughly and uniformly,* dried *quickly and* stored *safely.

CIRCUL-AIR lengthens hose life and keeps hose in top condition

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The fast, modern way to handle, store and load hose.

Saves space. Holds 1800 ft. of 2½" hose—proportionately more of 1½". Roll it right up to the truck for complete hose reload—out of the way when not in use.

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ROTO-JET Washes, Rinses, Drains hose thoroughly and quickly. Simple, one-man operation. With or without detergents, ashes, dirt, mud and sludge are automatically scrubbed out and flushed away.

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cycle rating. Power plants of this type, were originally manufactured for use with military aircraft radio, special tools, etc., where compact high power, and light weight equipment is a necessity. To employ them for use with motors not of the same rating may result in damage to the generator. This warning includes the use of AC-DC or "Universal" motors.

Aerial Ladder Measurement

To the Editor:

Is the height of an aerial ladder measured from the turntable or the ground?

S. W.

Answer: It is the practice in this country to denote the height of an aerial ladder by measuring it fully extended at maximum elevation from the ground to the top rung of the uppermost fly ladder (see Pamphlet No. 19, NBFU Specifications for Motor Fire Apparatus, Chapter 8, Sec. 8012).

It may be noticed that some European-style ladders for use in this country are designated by the actual ladder length. This is done because they are intended for mounting on a U. S. chassis and depending on the final vehicle choice, the over-all height of the completed apparatus may vary. □□

September Fire Losses

Estimated fire losses in the United States during September amounted to $81,845,000, the National Board of Fire Underwriters has reported.

According to Lewis A. Vincent, NBFU's general manager, this $81,845,000 loss represents a decrease of 1.4 per cent below losses of $83,027,000 reported for September 1959, and a decrease of 9.1 per cent under losses of $90,037,000, for last August.

Losses for the first nine months of 1960 now total $828,851,000, an increase of 3.5 per cent over the first nine months of 1959, when they amounted to $800,887,000.

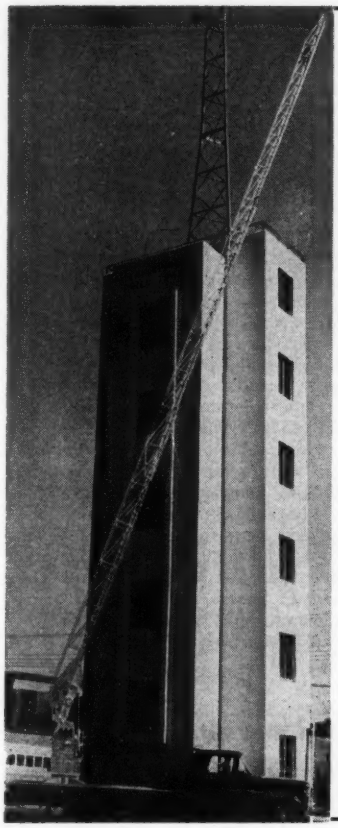
These estimated losses include an allowance for uninsured and unreported losses.

Denver to Lease New Fire Headquarters

City officials of Denver, Colo., recently signed a lease for use of a building at 914 - 12th Street as fire department headquarters. The present headquarters must be moved from leased quarters at 1502 Cleveland Place, owned by the University of Denver. The university plans to utilize the space for faculty offices.

Denver will pay $400 a month for lease of the building under a five-year contract and the city council will be asked for a $60,000 appropriation to remodel the building into quarters for the headquarters and fire school.

E. W. Fair



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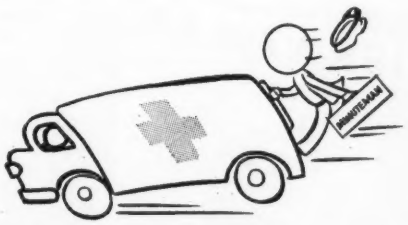
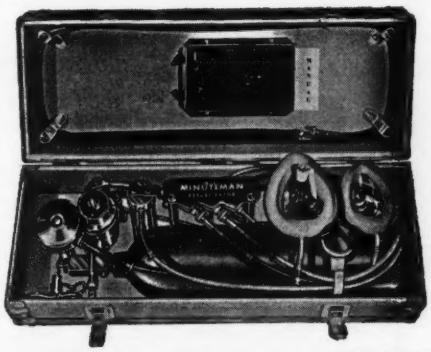


prevents emergencies from becoming tragedies



The Stephenson Minuteman Resuscitator is essential in respiratory emergencies where a minute may save—or lose—a life. The instrument costs infinitely less than the first life it saves.

Compact (24½" x 8¾" x 7¾") and weighing only 28 pounds, the Minuteman is a combined resuscitator, inhalator and aspirator. With an extra Midget attachment it will resuscitate two patients and aspirate a third simultaneously. The Minuteman is easily regulated to mixtures from 100% oxygen to 50% oxygen, 50% nitrogen from the air. Pressures are adjustable from Adult to Infant, with manual override when needed.

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Teaching Machine for Fire Service Training

The International Association of Fire Chiefs has reported that a teaching machine is being used in training a group of Los Angeles County firemen and their officers. It is an experimental model of the Hughes Videosonic Teaching Machine developed by the company's Industrial Systems Division, Culver City, Calif. This is the first time a teaching machine has been used by the nation's fire service and agreement to use it in a pilot course was reached recently by representatives of the IAFC, Los Angeles County Fire Department and Hughes Aircraft Co. Program material for the course will include slides, tape recordings and graphic arts.

B. Richter Townsend, IAFC's executive director, disclosed the experimental courses will be devoted to training in fire fighting knowledge and skills. Chief Keith Klinger, Los Angeles County Fire Department, has assigned Battalion Chief Noel M. Manchester as liaison to the Hughes Aircraft Company where Dr. Leonard C. Silvern, education and training research director for Videosonic Systems, is conducting the experiment.

Ohio Chiefs Elect Lange

Chief Fred W. Lange, East Cleveland, Ohio, Fire Department, was elected president of the Ohio Fire Chiefs Association at the group's 56th Annual Conference held in Lima, Ohio. Named to serve with him were: Chief Forrest B. Lucas, Dayton, first vice president; Chief Gerald F. Vernotzy, Akron, second vice president; Chief William H. Cheesman, Harrison Township, secretary-treasurer; Chief Merle W. Gifford, Boardman Township, assistant secretary-treasurer; Chief Homer F. Johnson, Findlay, chairman, board of directors; and Chiefs Muriel Nagle, Millville; William Fibich, South Euclid; James Gross, Champion Township, directors.

Chief Walter L. Hydaker

Fisk Heads Pacific Coast Fire Chiefs

Chief Harold C. Fisk, Tacoma, Wash., Fire Department was elected president of the Pacific Coast Inter-Mountain Association of Fire Chiefs at the recent conference held at Las Vegas, Nev. He succeeds Chief James Sweeney, Jr., Oakland, Calif., who automatically becomes chairman, board of directors.

Other officers include: First vice president John Garthe, Santa Ana, Calif; Second vice president, Chief Harold H. Dean, Phoenix, Ariz.; and secretary-treasurer, S. H. Edmondson, retired chief, Pasadena, Calif. The 1961 annual meeting will be held in Las Vegas on September 25 in conjunction with the International Association of Fire Chiefs conference.

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SAFEGUARDING SCHOOLS

Continued from page 1117

proved fire walls, the law strictly interpreted would require all fire-resistive sections to be sprinklered, as well as the portion to which the ordinance was intended to apply.

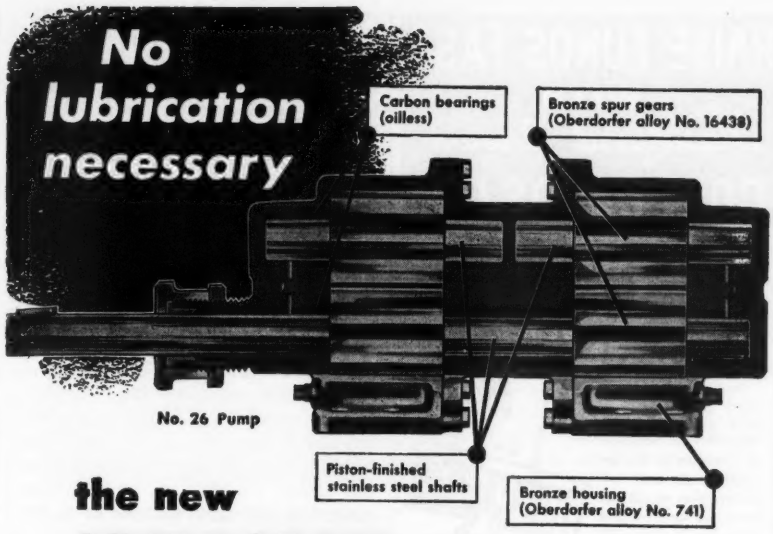
The vastness of the project and the fact that it represented something completely new for Chicago introduced numerous problems, many of which were solved by the two engineering firms most closely connected with the installations. Gage-Babcock & Associates, Inc., representing the Board of Education, and Schirmer Engineering Corporation, consultants to the Catholic school system, assisted from the very beginning to achieve the desired goals through the most economical means possible.

Innovations which the two firms recommended and which were accepted by the city included the use of a 250-gpm booster pump for small schools (instead of the 500-gpm pump previously the smallest permitted), the elimination of detector check valves, and variations from the code as it pertains to fire pump electrical services. Just these three items have resulted in claimed savings estimated to be in excess of $300,000.

Considerable progress has been made in what is considered to be the most important single requirement for preventing the recurrence of a disastrous school fire: Tying the school fire alarm system in with the nearest city box. By this means, the fire department immediately responds whenever the sprinkler system operates, an automatic heat or smoke detector is activated, or a manual station in the building is pulled.

Although no deadline was established, the fire alarm and police telegraph division expect to have completed the $3-million task of placing a fire alarm box within 100 feet of the main entrance of every school by the end of the year. So far, in approximately 50 schools the necessary equipment has been installed and the wiring out to the box has been completed. In the parochial schools, electricians are now completing the connections as fast as the city provides the master boxes. The job is taking longer at the public schools, where competitive bidding and individual contracts result in some unavoidable delay. However, before the end of the year, the Board of Education expects to have contracts awarded for all of the schools where connections are required, approximately one-tenth of which will be in operation by then.

This fire alarm work has resulted in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No. 26 Pump
Piston-finished stainless steel shafts
Bronze housing (Oberdorfer alloy No. 741)

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OBERDORFER BRONZE BOOSTER PUMPS

These booster pumps with oilless bearings will last 3 to 5 times longer than the old style equipped with plain bronze bearings. As a result of closer machining tolerances, over 20 feet of suction lift may be depended on.

The No. 13 and No. 26 Oberdorfer Pumps are more fool-proof than they have ever been. When you get to a fire you have something you can count on. It isn't necessary to wear pumps out checking them periodically to see if they will work. These pumps are metering pumps in principle and therefore must produce the same volume for every revolution of the drive shaft.

PERFORMANCE DATA—No. 26 and No. 13 PUMPS

Pump No.	Pump Shaft R.P.M.	Pounds Pressure	Hose Length and Size	Dry Suction Lift in Feet	Vol. in Gal. Per Minute
26	1600	120	500'—1½"	20'	150
13	1600	120	500'—1½"	20'	75

LIST PRICES — No. 26 — $249.50 No. 13 — $122.50

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several "firsts" for Chicago. Master boxes, which can be tripped either manually by pulling the handle on the box or electrically from a remote location, were used for the first time. The boxes being installed are the local-energy type, where the current for the trip coil circuit is provided from the building being protected.

Another first is the installation of boxes at 50 South Side schools by Illinois Bell Telephone Company on a trial basis. The telephone company is furnishing and maintaining the necessary circuits, terminating at a new panel at the Englewood fire alarm office. Voice communication through regular telephone handsets is an additional feature new to Chicago. The tripping of these boxes remotely from the school building will be accomplished in the same manner as in the Gamewell boxes.

Another new item is the auxiliary panel especially designed for use in Chicago to connect local alarm systems with the fire alarm office. Incorporating several features considered necessary by the electrical inspection bureau, the panel is being provided with a special key-operated switch for disconnecting the trip coil circuit when it is desired to hold a fire drill in the building. The panel is also equipped with a trouble bell and pilot lights to indicate abnormal conditions.

To most people familiar with the complexity of the modern fire alarm system and the extensively used dry-pipe sprinkler system, the problem of maintenance is considered one of the potential factors for eventual breakdown of the protection afforded by the systems. The law has no provision for periodic inspections and tests; yet unless they are made, there is, of course, no guarantee that the systems will function properly when needed.

Chicago has made great strides in the last two years towards achieving the goal of safe evacuation of all children from any school building which might be involved in a fire. Many schools have taken action to supplement the program adopted by the city council, further decreasing the possibility of a fatal fire.

In the majority of the schools with serious life-safety problems, sufficient improvements have been made to make it unlikely that there will be a repetition of the 1958 tragedy, but this is not true in every case. In some buildings where improvements are badly needed, little has been done, and it may require court action in some instances to force compliance with the fire safety laws. It is hoped that this will happen before more lives have been lost. □□

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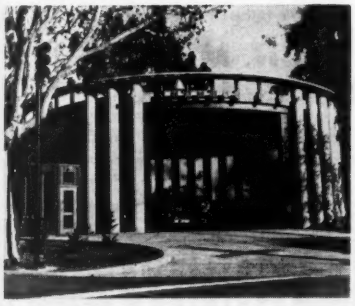
Establish Junior Fire Fighting Award

A National Junior Fire Fighting Award has been established to honor the heroism of youngsters who perform courageous acts in the face of fire, it was announced by the Baking Soda Institute. The award, a $100 United States Savings Bond, will be presented for the most heroic fire fighting act performed by a youngster 15 years of age or younger. The first award was made during Fire Prevention Week, October 9-15, with Fire Commissioner Robert J. Quinn of the City of Chicago making the presentation.

New Berkeley Station

Probably the only fire station in the country designed with a semi-Grecian motif is Station No. 4 at Berkeley, California. The new building was constructed at a cost of $106,000, and was dedicated at formal ceremonies on September 18. The new station houses a quad and two chief's cars, and was built to replace a former station close by which had been condemned.

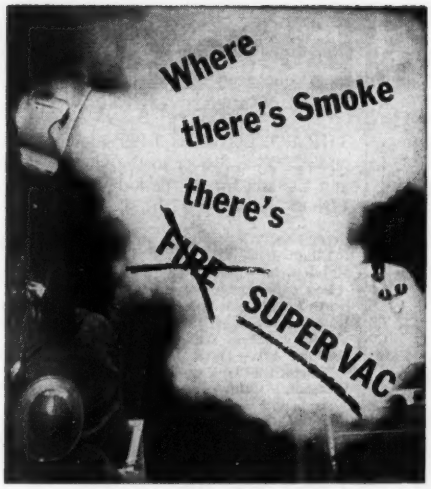


The unusual design of Station 4 is due to the park-like setting at a busy intersection in the northern area of the city, and was prompted by the citizenry who specified the facility must fit unobtrusively into the area. Construction is primarily of redwood and cement, with jalousie type windows and frosted glass areas. The sliding pole to the apparatus floor is eliminated, and access is by means of a short staircase from the readyroom, kitchen and lavatories situated on a slightly higher level. The building itself covers an area of approximately 3,500 sq. feet, and is surrounded by gardens and tastefully arranged paving.

R. T. Dymond

Raasch Heads Nebraska Volunteer Association

Alvin R. Raasch of Norfolk was elected president of the Nebraska State Volunteer Firemen's Association at the recent 78th Annual Conference held in Chadron. Other officers include: First vice president, E. H. Wolf, Deshler; second vice president, G. F. Carley, Dalton; and secretary-treasurer, Russel D. Salak, Schuyler. Norfolk has been selected as the site of the next conference to be held late in October 1961.



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- No dead spots — creates suction over *entire* face of housing.
- Prolonged motor life — blade forces air *over* motor surface to reduce motor heat.
- Now four sizes — 12" - 16" - 20" - 24".
- AC or DC, regular or explosion-proof motors.
- Running board mounts and hangar unit available.
- Choice of red, white, or metallic green baked enamel finish.

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What's Burning

THE FOLLOWING LIST includes fires of $10,000 and over in the United States and Canada for the period from October 17th to November 17th.

Greenbrier, Ala.—Cotton gin of J. D. and Joe Elliott destroyed.
Mobile, Ala.—Melody Club, night club, virtually destroyed. Defective wiring.
North Little Rock, Ark.—Walloch's TV & Appliance Store, The Tackle Box and North Little Rock Paint & Wallpaper Co., damaged.
Osceola, Ark.—Dyess Implement Co. damaged. Tractor fuel tank exploded.
Fremont, Calif.—International Kitchen destroyed.
Long Beach, Calif.—Edington Oil Refinery Co. storage yard considerably damaged. Asphalt tank ruptured.
Napa, Calif.—Ten dwellings in Soda Canyon destroyed. Rubbish fire.
Oakland, Calif.—Two dwellings destroyed.
Sacramento, Calif.—McClellan Air Force Base salvage and reclamation building destroyed.
San Francisco, Calif.—Hotel DePau destroyed.
San Francisco, Calif.—Sinaloa Night Club, Hotel de France, Tai Yock Co. store and adjoining buildings, damaged.
Brewster, Conn.—Palmer-Macomber Heating & Plumbing Co. destroyed.
Hartford, Conn.—Apartment dwelling, housing Club Sundown badly damaged.
Hartford, Conn. — Wampanoag Country Club siderably damaged. Possible arson.
Hartford, Conn. — Wampanoag Country Club building, housing employees' sleeping quarters, extensively damaged.
New Britain, Conn.—Two-story warehouse at rear of Grinold Auto Parts Co. destroyed.
Laurel, Del.—N. F. Allen & Son auto body shop, dwelling of Norman F. Allen, Sr. and barn owned by Lawrence E. Tullock, destroyed. Acetylene torch sparks caused explosion.
Marydel, Del. — Five buildings on Francis Thomas farm destroyed.
Milford, Del. — Former Calvary Methodist Church parsonage badly damaged.
Wilmington, Del.—Snyvar Corp. plant destroyed. Explosion.
Washington, D. C.—Apartment dwelling under renovation at Connecticut Avenue and Leroy Place N. W., heavily damaged. Acetylene torch ignited wooden joists.
Lake City, Fla.—Davis Lumber Co. destroyed.
St. Petersburg, Fla.—Howard Johnson Restaurant heavily damaged. Faulty fluorescent light.
Atlanta, Ga.—John S. Blick Building, housing decorating firm and manufacturing plant heavily damaged.
Atlanta, Ga.—Frank B. North's garage and adjoining Thomas B. Combs C., electrical contractors, damaged. Kerosene heater exploded.
Savannah, Ga.—Harmon's Inc. hardware and supply firm, Frank George's Barber Shop, Duke's Record Shop, Fischer's Watch Repair Shop, Uncle Sam's Shoe Repair Shop and three dwellings, destroyed; Von's TV & Repair Shop damaged.
Chicago, Ill.—Conrad Hilton Hotel on Michigan Avenue damaged.
Greenup, Ill.—Ohio Oil Co. building at pipeline booster station damaged.
Lincoln, Ill.—Fashion Furniture Store warehouse considerably damaged.
Nokomis, Ill.—P. N. Hirsch Department Store, Western Auto Supply Store, Keele's Quality Cleaners, Julius Sammon's Bakery, law offices of J. D. Wilson and apartments, destroyed; Kempton Drug Store damaged.
Peoria Heights, Ill.—Grand View Laundry & Cleaners damaged.
Springfield, Ill.—Building at abandoned Peerless Mine 59 destroyed.
Springfield, Ill.—Prince Building, housing Evans-Work & Costa Advertising Agency badly damaged. Boiler flame and gas accumulation caused explosion.
Bloomington, Ind.—Snoody Construction and Supply Co. warehouse destroyed.
Evansville, Ind.—West side apartment dwelling damaged.
Gary, Ind.—Block-long, one-story discount house destroyed.

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Marion, Ind.—Auto parts plant destroyed.
Peru, Ind.—North Grove grain elevator of Miami County Farm Bureau Cooperative Association damaged.
Vincennes, Ind.—Vincennes Steel Corp., division of Novo Industrial Corp., damaged.
Des Moines, Iowa—Building housing Schroeder Hardware and Dry Goods Store damaged.
Fairfield, Iowa—Boldt Chevrolet-Olds Inc. destroyed.
Missouri Valley, Iowa—Elevator of Francis Day estate, owned by Loveland Elevator Co., destroyed. Spontaneous combustion.
Monroe, Iowa—Pfister Hybrid Processing Plant destroyed.
Ashland, Ky.—Myers & Clark Milling Co. destroyed.
Elizabethtown, Ky.—Shady Grove Motel damaged.
Louisville, Ky.—Apartment dwelling at 1419 Airway Court considerably damaged.
Louisville, Ky.—Burnett Avenue Baptist Church badly damaged.
Mount Sterling, Ky.—Building housing Clay's Tobacco Warehouse and Burley Auction Warehouse Association destroyed.
Murray, Ky.—Murray Popcorn Co. destroyed.
Newport, Ky.—Vogelmann's Bakery, Inc. downtown plant virtually destroyed.
Owensboro, Ky.—Office and dispatch building of George Parr Trucking Co. destroyed.
New Sharon, Me.—Medomak Canning Co. plant destroyed.
Baltimore, Md.—Dwelling of Willie Squire Sr. destroyed; adjoining dwelling damaged.
Easton, Md.—Dwelling of Alexander Schwartz destroyed.
Boston, Mass.—Pierce Metal Mfg. Co. badly damaged.
Craigville, Mass.—Trade Winds Inn and Club destroyed.
Everett, Mass.—Three-story Elks Home damaged.
Fall River, Mass.—Unoccupied Falls Mills destroyed. Boy with matches.
Haverhill, Mass.—Two-and-a-half-story duplex of Kenneth R. LeBoeuf, Jr., and Mrs. Isabelle Woodsum destroyed. Oil heater explosion.
Lowell, Mass.—Rogers Hall School for Girls considerably damaged.
Lowell, Mass.—Business block housing Depot Shoe Fix, Old Franklin Bar, Motorcycle Sales and Service Shop and several unoccupied stores, considerably damaged.
Malden, Mass.—Commercial-residential block in Malden Square damaged.
Salem, Mass.—General Equipment Co., Frank Gallagher Plumbing Co., North Shore Thrift Shop and apartments, damaged.
Springfield, Mass.—F. W. Woolworth Co. store, State Liquor Mart and The Thrifty Cut-Rate Cosmetic Store, damaged.
Townsend, Mass.—Two buildings of 100-year-old Fesenden Barrel Co. destroyed; two others damaged.
Waltham, Mass. — Business building housing Dexter Drug Store, offices of Dr. John Murphy and Joseph Bell, photographer, damaged.
Waltham, Mass.—One-hundred-year-old barn on Fernald State School grounds destroyed. Explosion.
Alma, Mich.—Strand Theatre destroyed.
Battle Creek, Mich.—White Ice Cream Co. damaged. Explosion.
Niles, Mich.—White Bros. Bowling Lanes damaged.
Pontiac, Mich.—Oakland Theater building, housing Oakland Drugstore; Dr. Harold Bussey, Optometrist; Whitecroft Jewelers and several other firms, destroyed.
Saginaw, Mich.—William J. Muehlenbeck Excavating Co. damaged.
Newton, Miss.—Boys' dormitory at Clarke Memorial College damaged.
Carrollton, Mo.—Biltmore Trailer Co. plant heavily damaged.
Kansas City, Mo.—Vespa Cycle Co. and adjoining McGee Auto Transmission Repair & Exchange damaged.
Bozeman, Mont.—Monarch Lumber Co. retail store and warehouse destroyed.
Glendale, N. H.—Goodhue's Boathouse damaged.
East Orange, N. J.—Jacobs Stationery Store and dwellings of N. Jacobs and E. J. O'Sullivan, considerably damaged.
Jersey City, N. J.—Factory building, housing Wonderland Fashions and Admiral Sample Card Co. severely damaged.
Passaic, N. J.—Apartment dwelling, housing three stores, considerably damaged. Three boys were seen dropping matches into basement grating.

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Passaic, N. J.—Pauline Klein's Women's Apparel Store and Mollie Ramer Dress Shop damaged. Explosion.
Ridgewood, N. J.—Ridgewood High School damaged.
Roselle, N. J.—Panarco Co. paper equipment firm damaged.
Binghamton, N. Y.—Towne Distribution Inc. warehouse destroyed. Cigarette thrown in rubbish pile.
Buffalo, N. Y.—Voelker's Bowling Alleys building, also housing bar and apartments, damaged. Faulty fuse box.
Clayton, N. Y. — Dwelling on North Island owned by Gus D. Garner destroyed.
Easthampton, L. I., N. Y.—Barn and 20 head of cattle destroyed.
Jamesville, N. Y.—Barn of Otis Burt on RD 1 destroyed. Boys with matches.
Meredith, N. Y.—Barn on Erwin Crites farm destroyed.
Lockport, N. Y.—Sterling Molders Inc. plastics plant damaged.
St. James, L. I., N. Y.—Smithtown Riding & Tennis club damaged.
Troy, N. Y.—Albia Box & Paper Co. destroyed.
Warrensburg, N. Y.—Two-story building, housing new car showroom, restaurant and apartment, destroyed.
Durham, N. C.—Saddle Club Restaurant heavily damaged. Blazing grease.
Fayetteville, N. C. — Remnant Shop of Mrs. Omega B. King, Cavin Copying Products and Fayetteville Factory Outlet, destroyed.
Greenville, N. C.—Quinn, Miller & Stroud furniture store damaged.
Lexington, N. C.—Tasty Freeze destroyed.
Robbinsville, N. C.—Crawford Hotel destroyed.
Smithfield, N. C.—B & R Wilson, Inc., auto agency destroyed.
Canton, Ohio—Building housing Bilyn's Restaurant and J. C. Penney Co. warehouse destroyed.
Cincinnati, Ohio—Vacant Finneytown Inn building heavily damaged. Two youths with railroad flares.
Cincinnati, Ohio — Warehouse, housing Tex Style Inc. and Union Selling Co. damaged. Overheated stove.
Columbus, Ohio — One-hundred-year-old barn on Noel Brenner farm, damaged. Short circuit.
Defiance, Ohio—Weston Hall at Defiance College destroyed.
Jefferson, Ohio — At least seven buildings in downtown section, housing new restaurant, grocery store, jewelry store, auto dealership and hardware store, destroyed; several other buildings damaged.
Mason, Ohio—Two warehouses of Bethany Industries damaged.
Masury, Ohio—General American Transportation Corp. destroyed.
Newark, Ohio—Rockwell Standard Corp. damaged.
Niles, Ohio—Rose Lumber Co. damaged.
Toledo, Ohio—Sebastian's Restaurant & Cocktail Lounge damaged.
Oklahoma City, Okla.—Harry Keeting Mattress Mfg. Co. heavily damaged. Explosion.
Eugene, Ore.—YMCA building damaged. Arson reported.
Newport, Ore.—Whale Cove Inn destroyed.
Portland, Ore.—Western Seat Covers plant destroyed.
Portland, Ore.—Vista Casuals, men's clothing plant, destroyed.

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Lebanon, Pa.—San Giorgia Macaroni, Inc., plant damaged.
Marcus Hook, Pa.—Sun Oil Co. refinery plant damaged. Welding torch spark ignited escaping gas from pipeline.
North Scranton, Pa.—Vacant building of Carol Rocke destroyed. Prowlers.
Philadelphia, Pa.—Acropolis Baking Co. plant heavily damaged.
Philadelphia, Pa.—Dwellings at 1517, 1515, 1513 and 1519 Park Avenue and 1518, 1516 and 1520 Clarion Street, damaged.
Philadelphia, Pa. — Mansion of Albert Viscoe heavily damaged.
Philadelphia, Pa. — Reading Terminal at 12th and Market Streets heavily damaged.
Quarryville, Pa.—St. Paul's Evangelical and Reformed Church damaged.
Portsmouth, R. I.—Barn on former Bardford Norman estate, now owned by Roman Catholic Diocese of Providence, destroyed.
Woonsocket, R. I.—United Wadding Co. and Mark Steven Inc., wholesale druggists, damaged.
Clemson, S. C.—Southern Bell Telephone Co. offices damaged.
Marion, S. C.—Thompson & Wallace Cotton Co. damaged. Defective wiring.
Memphis, Tenn.—Security Signals Inc., incendiary bomb plant, destroyed. Explosion.
Freeport, Tex.—Glycerine unit of Dow Chemical Co. damaged.
Hopewell, Va. — Lakewood Supper Club destroyed. Faulty electrical wiring.
Richmond, Va.—Barn at Curles Neck Farm, including nine show ponies, destroyed.
Richmond, Va.—A. E. Tate Lumber Co. Inc. heavily damaged.
Williston, Vt.—Barn, machinery shed and bulk milk tank on Paul Blair dairy farm destroyed.
Elm Grove, Wis.—Home of Robert Ban gutted.
Lake Benet, Wis.—Dormitory of the Benedictine Monastery in southern Kenosha County destroyed.
Neenah, Wis.—Neenah Power Plant damaged. Fire believed caused by lightning bolt.
London, Ont.—Belmont Restaurant, Lounge Restaurant, Easton Fisher Brokerage offices, Richmond Bowling Alley, Avon Beauty Parlor and apartments destroyed; Capri Restaurant, Collison's Jewelry Store, Milton Dress Shop and Vito's Restaurant, damaged.
Montreal, Que.—Factory building of John Millen & Sons, Ltd., wholesale automotive equipment division, also housing Custom Manufacturing of Metal Products, severely damaged.
Quebec, Que.—Four buildings of business block on St. Jean Street, housing three restaurants, barber shop, men's clothing store and several rooming houses, destroyed. □□

FIRE COLLEGES

Fire Department Instructors Conference—Feb. 28-March 3, Memphis, Tenn. For information write Harry H. Wolff, Conference Secretary, P. O. Box 1089, Chicago 90, Ill.

Indiana Fire Service Training Program—Jan. 16-20, Fire Instructors Course; Feb. 7-9, Fire Administration Course; Apr. 4-6, Industrial Fire Course; Apr. 24-28, Arson Investigators Seminar; May 15-19, Basic Fire School; June 6-8, Rescue Training Course; Sept. 13-16, Indiana State Fire School; Oct. 30-Nov. 3, Fire Inspectors Course. All courses to be held at Purdue University, Lafayette, Ind. For information write, Professor Shelby Gallien, Director, Public Safety Institute, Division of Adult Education, Purdue University, Lafayette, Ind.

Morris County Fire School—January 3, Chatham Fire Headquarters; February 7, District #6 Fire Headquarters, Parsippany Troy-Hills; March 7, Budd Lake Fire Headquarters. For information, write Robert H. Wright, Long Hill Lane, Chatham, N. J.

South Carolina Firefighters Training Program—Dec. 19-23, Wade Hampton (Greenville); Jan. 2-5, Summerville; Jan. 9-13, Cayce; Jan. 16-20, Darlington; Jan. 23-27, Maulden. For information, write: H. B. Wells, Instructor, "Shady Springs," Route 1, Box 119, Prosperity.

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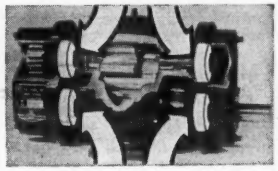

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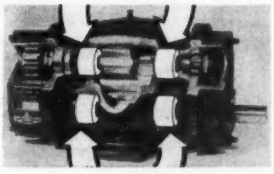

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New York Sets Long Range Plans for Improvements

The New York City Planning Commission recently approved and sent to the Board of Estimate a proposed 1961 capital budget, which included $8,104,412 for the fire department. The allocation provides at least the initial funds for 23 new firehouses; reconstruction of an existing firehouse; reconstruction of an existing building for field communication maintenance for fire alarm system; reconstruction of an existing building and construction of a drill tower for the fire college and training school at Welfare Island; construction, extension and improvement of fire alarm communication system, including radio, in all boroughs, and a new central fire communications building in Staten Island.

More than a million dollars ($1,112,547.62) was allocated for new fireboats and related equipment, and $862,781.84 for fire fighting vehicles and apparatus.

The Planning Commission points out that of 275 firehouses, 199 were built to accommodate horse-drawn equipment, 90 of them in the last century. The commission has been able to program only three firehouses a year. To bring the department's physical plant reasonably up to date would require at least twice that number. Furthermore, the fire commissioner makes the legitimate complaint that highest priority is given to houses whose relocation is forced by housing or other public improvements, and not to the worst ones as requested by the department.

Public hearings on the proposed capital budget were scheduled for November 15 and 16 at City Hall.

New Jersey Chiefs Elect Hunt President

The New Jersey State Fire Chiefs' Association elected Chief Russell M. Hunt, Haddonfield, as president during the fall meeting of the organization. Also named to serve with Chief Hunt were: First vice president, Chief Edward F. Deignan, Elizabeth; second vice president, Chief Jacob T. Lewis, Morris County Civil Defense Fire Division; secretary-treasurer, Chief William G. Wandras, Kearney; trustee, Chief Arthur Bilby, Montclair. All officers will serve a two-year term.

Fireman Dies in Toronto Supermarket Fire

Robert Ludlow, a 21-year-old rookie fireman, married less than a month, died on November 7 when he was trapped in the basement of a burning Toronto supermarket.

Ludlow and another fireman had entered the basement, where the fire is believed to have been smoldering overnight. They became separated and Ludlow's companion was unable to locate the rookie, and barely escaped himself. He was overcome by smoke and taken to a hospital, where he was kept in an oxygen tent for three days.

Fire Chief Ernest Woods of the York Township Fire Department, which Ludlow had joined about a year ago, had a crew of men searching the sprawling supermarket for their companion. They were forced to abandon the search, however, when three of the walls bowed and the roof steel sagged badly, and were unable to go back into the basement until the fire was under control and the walls shored.

Ironically, a sprinkler system had been installed in the store, and was to have been connected and in operation on the day of the fire.

VOICE AMPLIFICATION

Continued from page 1128

subject under discussion, moderated the lesson from his office with each fire station participating. A bulletin describing the procedures that were to be followed, the date and time of each class, and copies of the manuals that were to be used were sent to all fire stations. These manuals contained all the information pertinent to the course as well as questions which the personnel were required to answer.

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Basically the course was designed to instruct the fire captains in safety so they in turn could instruct their men. Prior to each broadcast, the captains and their men would go over the lesson assignment. When the class went on the air, the captains were prepared to answer questions, participate in discussions and request answers to questions that were raised. All personnel listened to the program and benefitted by the discussions.

Personnel who were absent, as a result of being sick or on vacation, were given the lessons at a later date. Each lesson was recorded and each absent fireman was contacted either by telephone or by the training office, and the subjects covered during his absence were reviewed.

Five 2-hour sessions

The course was divided into five sessions of two hours each. Four were instructional, the fifth was a final examination.

Different types of final examinations were given the personnel. The officers were required to answer essay-type questions while other personnel were given a true and false test by their captains. The tests were graded and, at a later date reviewed over the amplification system.

Studio-type recording equipment in the alarm headquarters made it possible to record the programs. This enabled the training officer to transmit the material to the stations for review.

The reception by the firemen was good. A survey disclosed that the majority of the men felt they gained considerable knowledge from the course and that they would prefer more courses taught by this method. □□

Editor's note: The preceding article is a condensation of a presentation made by the author at the Memphis Fire Department Instructors Conference, March 1960.

Burglars Rob Stores During Church Fire

Arson investigators are checking the ruins of Grace Episcopal Church, Baldwinsville, N. Y., following a fire on November 20 which gutted the interior of the 125-year-old landmark. Apparently set afire to cover a series of burglaries, 10 Onondaga County fire companies fought the blaze late into the night.

After the fire was brought under control, it was discovered the church safe had been pried open and vestments and chalices strewn about. At the same time thieves broke into three automobile salesrooms, an automobile accessory store, a furniture store and a grocery under cover of the excitement caused by the spectacular fire.

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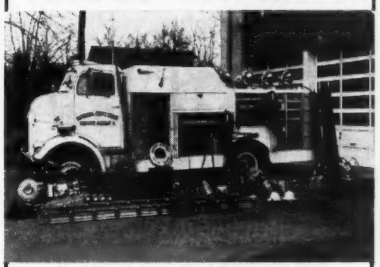

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FOR FURTHER INFORMATION *write or phone Mr. Robert Morris, President, Board of Directors, Bethesda Chevy-Chase Rescue Squad, 4910 Auburn Ave., Bethesda 14, Maryland. Phone OLiver 2-1001*

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Closed Chest Massage Saves Woman's Life

Fireman Charles Monzillo of the New York Fire Department's Rescue Company 2 applied closed-chest massage to a woman who failed to respond to resuscitator treatment, and restored her to consciousness on November 6. Mrs. Christina Acosta was one of 38 persons brought out of a five-story tenement that had filled with coal gas fumes from a faulty furnace. Most of the residents required inhalator treatment from crews of five ambulances and the rescue company.

Fireman Charles Monzillo of Rescue Company 2, FDNY, demonstrates on Fireman John Leavey of the same unit how he applied closed chest massage to a woman to save her life

—Photo by Howard Carlson

Mrs. Acosta, who suffered from a heart ailment, was carried from the building, and firemen could not detect her pulse beat. When a resuscitator failed to rouse Mrs. Acosta, who was about to be pronounced dead, Fireman Monzillo took over. Although the New York Fire Department has not yet officially adopted the new method, Monzillo applied closed-chest massage as a last resort. Within 10 minutes, Mrs. Acosta had regained consciousness and her pulse was normal. Although she was hospitalized, she was not considered in serious condition.

When interviewed by the New York *Journal-American*, Mr. Monzillo revealed that members of the rescue company had learned of the method through an article in the September 1960, issue of FIRE ENGINEERING, and had devoted a drill period to its study and practice. Captain Martin J. Lawler, commanding the rescue company, has recommended that Monzillo be cited for his "initiative and capability" in the emergency.

Author of the article Fireman Monzillo had read was Fire Captain Martin C. McMahon, supervisor of Baltimore's ambulance service. Since last May, personnel of the service have used the technique on 14 persons. Ten of them are alive and well. The staff of Johns Hopkins Hospital has used closed-chest massage on more than 75 persons with success in 65 per cent of the cases.

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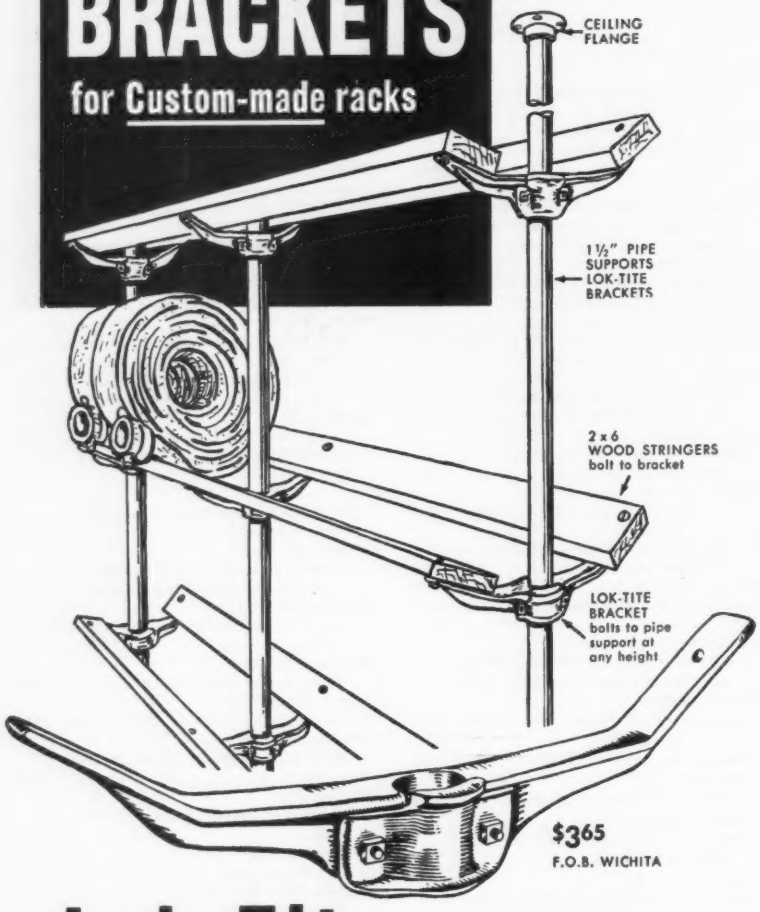
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DECEMBER, 1960

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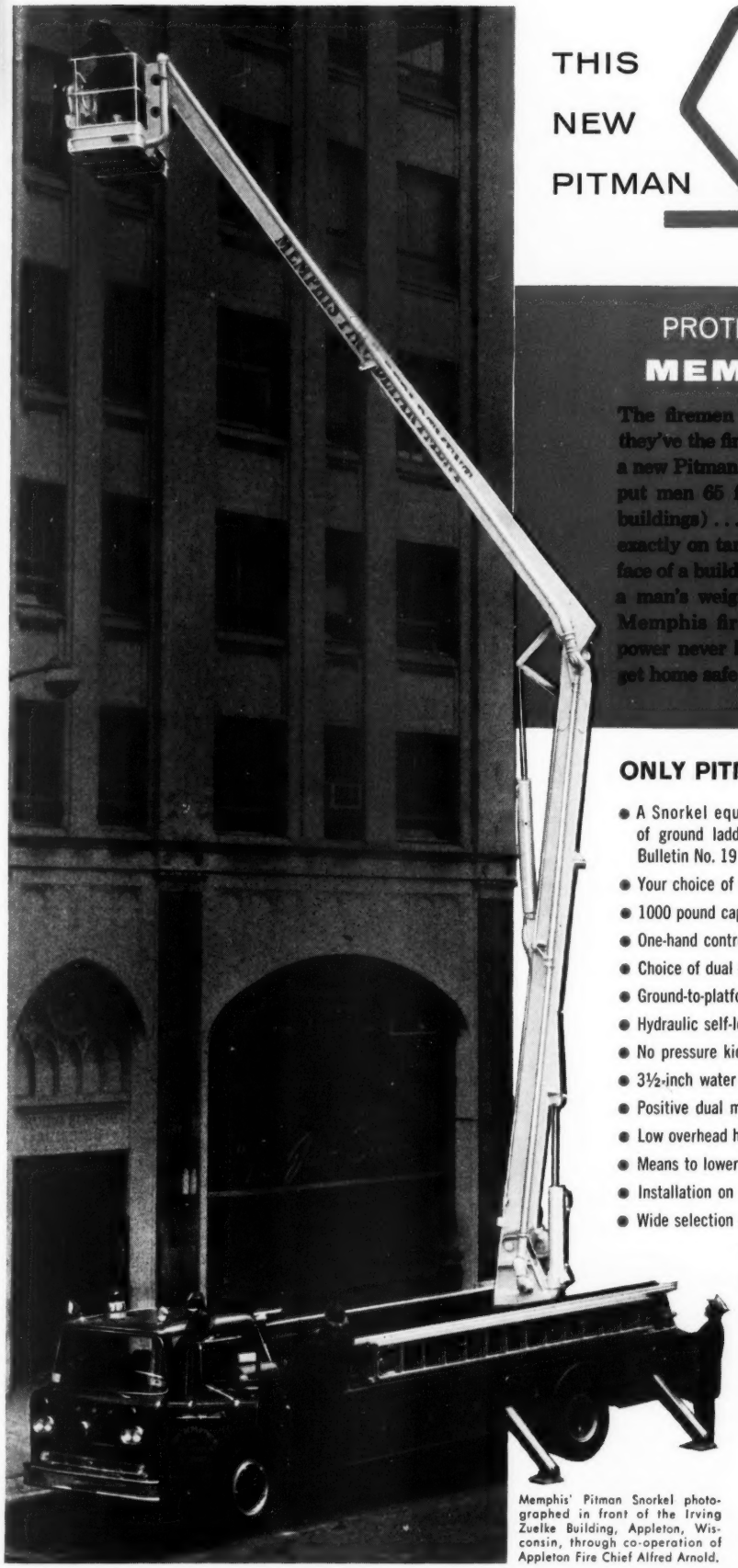

Memphis' Pitman Snorkel photographed in front of the Irving Zuelke Building, Appleton, Wisconsin, through co-operation of Appleton Fire Chief Alfred Arnold.

THIS NEW PITMAN Snorkel

PROTECTS THE CITY OF

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908	1"	Pistol Grip	4¾	23	98
905	¾"	Solid Base	3	12	88
904	¾"	Pistol Grip	4¾	12	98
915	1½"	Swivel Base Solid Base	5¾ 5¼	95-60	96

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